CLASS

ENVIRONMENTAL ASSESSMENT

FOR

MUNICIPAL SEWAGE AND WATER PROJECTS

Municipal Engineers Association

CLASS

ENVIRONMENTAL ASSESSMENT

FOR

MUNICIPAL SEWAGE AND WATER PROJECTS

Prepared by:
The Municipal Engineers Association

Ontario

Office of the Minister

Ministry of the Environment

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ENVIRONMENTAL ASSESSMENT ACT

SECTION 14

NOTICE OF APPROVAL TO PROCEED WITH THE UNDERTAKING

RE: A Class Environmental Assessment for all Municipal Sewage and Water Projects

Proponents: The Corporation of the City of Barrie
The Corporation of the City of Guelph
The Corporation of the City of London
The Corporation of the City of Scarborough
The Municipality of Metropolitan Toronto
The Regional Municipality of Durham

EA FILE NO. 2-81-0003-000

TAKE NOTICE that the period for requiring a hearing, provided for in the Notice of Acceptance of the Environmental Assessment for the undertaking, expired on April 1, 1986. I received one notice requiring a hearing by the Environmental Assessment Board with respect to approval to proceed with the undertaking. I have decided, pursuant to clause 12(2)(b) of the Act, that a hearing is unnecessary.

Having considered the purpose of the Act, the Environmental Assessment of the undertaking as amended and accepted and the submissions received, I hereby give approval to proceed with the undertaking subject to the conditions in the attached schedule.

REASONS:

My reasons for giving approval are:

1. On the basis of the proponents' Environmental Assessment, the Review, the amendments and submissions, the proponents have established appropriate planning procedures to ensure that the advantages of the projects carried out pursuant to this approval will outweigh the disadvantages of these projects.

2. The effectiveness of this Environmental Assessment in meeting the Act's purpose will be monitored and appropriate changes can be made to the Environmental Assessment during the approval period of five years.

Dated at Toronto the 9th of April , 1987.

Minister of the Environment

Approved by

O.C. No. 836/87

SCHEDULE TO THE NOTICE OF APPROVAL TO PROCEED WITH THE UNDERTAKING DESCRIBED IN THE CLASS ENVIRONMENTAL ASSESSMENT FOR MUNICIPAL SEWAGE AND WATER PROJECTS DATED APRIL 9 , 1987

1. Except as provided by the subsequent conditions, the proponent shall comply with all provisions of the Environmental Assessment as amended and accepted which are herein incorporated by reference.

2. Notwithstanding condition 1, where a project approved hereby reaches the contract drawing stage (shown on the flow chart in the Environmental Assessment) by October 11 , 1987, the proponent of the project need not comply with the other requirements of this approval. (*The date selected will allow for a six-month phased implementation period.)

3. For the purposes of condition 2, "contract drawing stage" means that stage where the planning and design of a project is complete such that drawings to be used for tendering purposes or during construction can be prepared for signature by the senior municipal official authorized for such purposes.

4. Where two or more Environmental Assessment approvals affect a municipal sewage and water project, to which this Environmental Assessment approval applies, the requirements of each Environmental Assessment approval shall apply except to the extent the Minister has by notice in writing to the proponent ruled that one or more provisions in conflict with another provision shall not apply.

5. The Minister shall consider all requests for amendment to the Environmental Assessment submitted by the six proponents or submitted by the Municipal Engineers Association on behalf of the six proponents, and where in the opinion of the

Minister, an amendment is necessary and is in the interests of all the municipalities of the Province of Ontario, shall cause to be issued to the public, any potentially affected municipality and provincial ministry and agency, a Notice of Proposed Amendment, allowing at least 30 days for comment. In reviewing these comments, the Minister shall have consideration for the intent of the Environmental Assessment and the requirements of the Environmental Assessment Act. The Minister may refer the amendment to Cabinet for approval, and if approved shall cause a Notice of Amendment to be given to all persons who made submissions and shall place a copy of the Notice in the Public Record.

6. This approval shall terminate on the earlier of:

   (a) the date on which any new approval is issued for the undertaking under the Environmental Assessment Act and,

   (b) subject to condition 8, the fifth anniversary of this approval.

7. Within four (4) years following this approval, the proponents or the Municipal Engineers Association, acting on behalf of the proponents, shall advise the Minister of the Environment regarding the appropriatness of extending this approval.

8. For the purposes of condition 6(b), the Minister of the Environment may from time to time specify a later date by a notice in the Ontario Gazette.

9. Item 6 listed under the heading of "Sewage Project" in Schedule A, Appendix 1, is hereby revised to read: "dispose of; utilize; or, manage on an interim basis (e.g., further treatment of sludge at drying beds, composting, temporary holding at transfer stations), sludge at an existing sewage treatment plant where the sludge is generated; or at an existing landfill, incineration or organic solid conditioning site, where the sludge is to be utilized or disposed of."

10. Item 6 listed under the heading of "Sewage Projects" in Schedule C, Appendix I, is hereby revised to read: "dispose of; utilize; or, manage on an interim basis, sludge at a new sludge landfill site or new sludge incineration site."

11. Schedule A, Appendix I, under the heading of "Sewage Projects" is hereby revised to include an item number "10", which shall read: "Expansions, improvements and modifications to existing patrol yards, storage facilities and maintenance facilities where no additional land acquisition is required."

12. Schedule A, Appendix I, under the heading of "Water Projects" is hereby revised to include an item number "6", which shall read: "Expansions, improvements and modifications to existing patrol yards, storage facilities and maintenance facilities where no additional land acquisition is required."

13. Schedule A, Appendix I, under the heading of "Water Projects" is hereby revised to include an item number "7" which shall read: "new water systems for which an approval under the Ontario Water Resources Act is not required".

14. Schedule B, Appendix 1, under the heading of "Sewage Projects" is hereby revised to include an item number "12", which shall read: "new sewage systems classified by Ontario Regulation 374/81 as Class 4, 5 or 6 sewage systems, other than Class "A" sewage systems or as Class 1, 2, or 3 sewage systems."

15. Schedule B, Appendix I, under the heading of "Sewage Projects" is hereby revised to include an item number "11", which shall read: "Expansions, improvements and modifications to existing patrol yards, storage facilities and maintenance facilities where additional land acquisition is required."

16. Schedule B, Appendix I, under the heading of "Water Projects" is hereby revised to include an item number "9", which shall read: "Expansions, improvements and modifications to existing patrol yards, storage facilities and maintenance facilities where additional land acquisition is required."

17. Schedule C, Appendix I, under the heading of "Sewage Projects " is hereby revised to include an item number "8", which shall read: "New service facilities (e.g., patrol yards, storage and maintenance facilities, parking lots for service vehicles)."

18. Schedule C, Appendix I, under the heading of "Water Projects" is hereby revised to include an item number "7", which shall read: "New service facilities (e.g., patrol yards, storage and maintenance facilities, parking lots for service vehicles)."

19. Item 2 listed under the heading of "Water Projects" in Schedule C, Appendix 1, is hereby revised to read: "construct new water treatment plant or expand existing water treatment plant beyond existing rated capacity to service development which is not provided for in approved development plans or official plans, or which involves the acquisition of new property."

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SUMMARY

ENVIRONMENTAL ASSESSMENT ACT

RE: An Environmental Assessment received from The Municipal Engineers Association (MEA) of Ontario for the establishment of a Municipal Sewage and Water Class Environmental Assessment.

Environmental Assessment File No. MU-0014/2-81-0003-000

This document deals with Municipal sewage and water projects where either a new municipal sewage or water facility is being established, or where an existing municipal sewage or water facility requires any physical modification over and above maintenance activity or operational improvements.

This document approves municipal sewage and water projects which can be characterized as being "operational" in nature (see Schedule A of Appendix 1). This document also approves any municipal sewage and water projects which, in general, have insignificant effects on the environment (see Schedule B of Appendix 1).

It also serves as a statement for public use in the decision-making process of those municipalities which adopt it for their use in the development and implementation of a project.

It also serves as an approved procedure under the EA Act for municipal staff in the planning, design and construction of municipal sewage and water projects to ensure that the requirements of the Environmental Assessment Act are followed.

For each project undertaken in accordance with this Class EA, (see Schedule C of Appendix 1), an Environmental Study Report (ESR) shall be written, covering the headings discussed below, and placed in the Public Record at the proponent municipality's Clerk's Office or the office of the P.U.C. Secretary.

This document is not intended to impose the class planning process on activities which are approved or approved subject to a screening process. Maintenance or activities related to the operation of an existing facility are approved under the Class EA. The proponent shall identify the problem, (Phase 1), and the alternative solutions to the problem, (Step 1 of Phase 2). At this point, the proponent may arrive at the conclusion that: the preferred solution is an activity which is approved, and therefore need proceed no further with respect to environmental assessment; or it is a project which is approved subject to screening and must follow the screening process.

1. PURPOSE OF THIS DOCUMENT

The projects in this Class EA are undertaken due to an identified deficiency in the level of sewage or water service available, usually typified by:

- poor effluent/water quality
- inadequate flow or pressure for peak demands/fire protection
- increased demand in a developing area
- high operating/maintenance costs
- flooding nuisance
- public health and safety.

2. DESCRIPTION OF THE UNDERTAKING

This Class EA deals with all municipal sewage and water projects, including:

a) the construction of new sewage and water facilities;

b) the reconstruction of any existing sewage or water facility;

c) maintenance and operational improvement activities.

Municipal sewage and water projects have been categorized according to the significance of the effects they could impose on the environment. The Class EA prescribes methodologies for planning projects within each of the categories.

It should be noted that, for those categories of projects having the potential to significantly affect the environment, the prescribed planning methodologies provide ample provisions for public review. If a specific project has significant negative net environmental effects which cannot be resolved by the proponent then the project may be "bumped-up" to an individual or "full" environmental assessment.

3. JUSTIFICATION FOR THE UNDERTAKING

A municipal sewage or water facility may have to be constructed (or reconstructed) in order to provide an adequate, economical or convenient level of service to the public, thereby providing an acceptable solution to the identified deficiency.

Individual application of the EA Act is therefore not warranted for projects of the nature covered by this document.

4. DESCRIPTION OF THE POSSIBLE ALTERNATIVES

This Class EA covers all municipal sewage and water projects. The prescribed planning methodologies require that the alternatives which are reasonably available to meet the purpose must be evaluated.

The alternatives to a Class EA would be:

a) each municipality prepare its own class document;

b) do nothing, i.e., do individual environmental assessments for each municipal sewage or water project; or

c) request project-specific exemptions.

5. SCOPE

The undertaking as submitted is designed to provide specific methodologies for municipalities, in the exercise of their responsibility to provide for the needs and wants of the public, as well as in their role in the general provision of sewage and water facilities.

The methodology provides for specific considerations such as identifying the problem and quantifying it in terms of the cost to the environment, in order to determine a solution to the problem.

The quantification of the costs of a project is intended to include a review of the alternative solutions, the environment affected by the alternative solutions, and the remedial measures needed to render a "best" solution to the originally identified problem.

The municipal proponent under this Class EA will have to balance the needs and wishes of the community for sewage and water facilities, against the costs of necessary mitigation measures. In some cases the costs of instituting the mitigating measures may be prohibitive and limit alternatives.

The municipality, as a concerned corporate citizen, has, by virtue of its close relationship with its electors, both a duty to protect valuable natural and man-made resources, and a responsibility to supply an effective and efficient water supply and wastewater treatment system.

6. GEOGRAPHIC AREA/BOUNDARIES WITHIN WHICH PROJECTS COVERED BY THIS CLASS EA WILL BE EXECUTED

While the geographic setting for projects covered by this Class EA will vary considerably throughout Ontario, for the purposes of

environmental analysis, they can be separated into the following broad categories:

For an urban area, those projects found in:

a) a stable residential area;
b) a pressured residential area;
c) a recreational area;
d) an institutional area;
e) a commercial area; and
f) an industrial area.

For a rural area, those projects found in:

a) a stable agricultural area;
b) a pressured agricultural area;
c) a recreational area;
d) undeveloped areas;
e) a commercial area; and
f) an industrial area.

While a map and appropriate description of the area related to the specific project shall be part of an ESR, it is impossible to provide specific geographic setting information in this document.

7. THE ENVIRONMENT AFFECTED OR POSSIBLY AFFECTED, EITHER DIRECTLY OR INDIRECTLY

The broad settings described in (6), point out the diverse nature of the environment that could be affected by the projects in this class. Each ESR will include a discussion of the environment affected by the specific project it pertains to under this class.

Furthermore, it is recognized that any project will alter the environment in some manner. The type(s) and magnitude(s) of environmental alteration(s) resulting from a particular project will depend on:

a) the specific characteristics of the solution to the identified problem, (including not only what is done, but how, when and where it is done); and

b) the specific characteristics of the environment within which, or in the vicinity of which, the project is carried out.

The significance of any type of environmental alteration will depend not only on its magnitude, but also on the importance of the environmental components which are altered. The importance of a component may vary according to its abundance, availability or accessibility, necessity, or desirability. Each of these may, in turn, vary with time, location or perspective. It should be noted that an integral component of the above evaluation must include the "environmental" cost of allowing the identified problem to continue.

8. REMEDIAL MEASURES FOR ADVERSE EFFECTS

Owing to the general nature of projects covered by the Class EA undertaking, it is impossible to identify specific remedial measures. However, the undertaking does provide ample opportunity for the identification of acceptable remedial measures, as well as for the provision of monitoring necessary to ensure that each specific project is built and operated in accordance with the approved design, inclusive of all environmental considerations.

9. ADVANTAGES AND DISADVANTAGES TO THE ENVIRONMENT

The Class document helps to standardize the planning of municipal sewage and water projects, inclusive of the environmental review process. This standardization will, in turn, allow the review agencies and the public to better understand the municipality's need to modify an existing facility, or create a new facility in response to the requirements of the community.

The major advantage is that municipalities will, by following the steps outlined within the undertaking, be able to follow an acceptable path in the reconciliation of the needs of the community and the environmental costs associated with change. Municipalities will also be more aware of the effects that their activities have on the environment.

Projects developed under this class document shall, in specific terms, outline the advantages and disadvantages to the environment.

10. STUDIES AND REPORTS DONE IN CONNECTION WITH THE UNDERTAKING

In order to formulate this Class EA document, the Committee established by the Municipal Engineers Association has:

a) circulated a preliminary outline to all municipalities complete with a Questionnaire.

b) circulated a preliminary outline to all Provincial Ministries and other affected organizations for their comments.

c) circulated a draft dated April, 1982, to all Municipalities, Provincial Ministries, members of the MEA and selected public interest groups.

Specific projects carried out under this Class EA shall report and document all related studies in the ESR.

11. BACKGROUND INFORMATION

In the preparation of this document, the MEA working group examined the following examples of Class EAs available in 1982:

a) the B-1 to B-7 series of Class EAs as prepared by the Ministry of Transportation and Communications (approved);

b) the B1-B4 series of Class EAs as prepared by TATOA approved and extended; soon to be replaced by Environmental Assessment Class Document. The construction of New or the Expansion of Existing Commuter Facilities;

c) the two Class EAs prepared by MOE for sewer and water works, respectively (under review);

d) Ontario Hydro's Class EA regarding transmission lines (approved);

(e) the Ministry of Natural Resources' Class EAs regarding resource management activities (under review); and

(f) the Municipal Engineers Association's Class EA for municipal road projects (under review).

GLOSSARY OF TERMS

ALTERNATIVE SOLUTIONS - alternative ways of solving a documented deficiency, including the alternative of doing nothing.

ALTERNATIVE DESIGN CONCEPTS - alternative ways of carrying out the preferred alternative solution.

APPROVED DEVELOPMENT PLANS - refer to plans of subdivision or plans relating to the zoning or division of land, providing such plans have been exposed to review by all potentially affected public and government agencies, through such procedures as are provided under the Planning Act for involving the public and government agencies in development proposals.

BUMP-UP - refers to a decision by the proponent or by the Minister that the environmental significance of a project is of such proportion that the procedures for environmental assessment provided for under the Class EA process are not sufficient, and that an individual environmental assessment is required.

CLASS ENVIRONMENTAL ASSESSMENT (EA) PROCESS - a planning process used for a group of projects which are relatively small in scale, recur frequently, have a generally predictable range of effects, and have relatively minor environmental significance.

CLASS EA DOCUMENT - a report documenting the Class EA process which is formally submitted under the Environmental Assessment Act. Projects covered by the Class EA may be implemented without having to seek further approvals under the EA Act provided that the Class EA process is followed.

COMMITTEE - refers to the special working group established by the Municipal Engineers Association to prepare Class EA documents for use by municipalities.

COMMUNAL FACILITIES - refers to facilities requiring approval under sections 23 and 24 of the Ontario Water Resources Act or under Parts V or VII of the Environmental Protection Act.

CONSTRUCTION PACKAGE - refers to the documentation used to direct the contractor during project construction.

CONTRACTOR - refers to anyone who carries out the construction of a project including municipal staff.

CONTRACT DRAWINGS - drawings being prepared for signature by the senior municipal official prior to construction, that will be used during construction.

DEFICIENCY - refers to a documented shortfall in an existing sewage or water facility, for purposes of existing or future needs.

ENVIRONMENT - refer to section 1(c) of the Environmental Assessment Act.

ENVIRONMENTALLY SENSITIVE AREAS - natural areas having significant natural resource value and/or important ecological functions, but which are susceptible to disturbance from human activities. They may include one or a combination of wetlands, river valleys, woodlands, small lakes, or hydrogeological features (e.g., moraines or spring areas).

ENVIRONMENTAL STUDY REPORT (ESR) - refers to the documentation for a specific project which illustrates the planning and decision making process which has been followed, and the mitigating measures which will be taken to ensure that the Environmental Assessment Act has been adhered to.

EXEMPT PROJECT - refers to a project for which approval by the Minister of the Environment is not required under the Act.

EXISTING SEWAGE OR WATER SYSTEM - a sewage or water facility which is in existence or has received all necessary approvals including Certificates of Approval under the Ontario Water Resources Act and/or Environmental Protection Act.

EXISTING RATED CAPACITY - refers to the flow or volume capacity of the overall sewage or water system, as certified under the Ontario Water Resources Act and/or the Environmental Protection Act, or as implied in the plans and specifications that were submitted to obtain the above mentioned certificates, or where no technical documentation exists, is the current existing capacity.

EXPANSION OR UPGRADING - refers to activities taking place upon an existing sewage or water system which do not meet the definition of operation as defined below.

FEASIBILITY STUDIES - refers to testing, research or any action necessary to comply with the Act, such as exploratory drilling, soil sampling, etc. Feasibility studies are exempt from the Act.

FULL ENVIRONMENTAL ASSESSMENT - refers to individual environmental assessment which requires the submission of a formal document for an undertaking to which the Act applies, and which is not exempt nor covered by Class EA approval.

HAZARD LANDS - lands which, because of their physical characteristics in combination with their location, sustain a risk for the occupants of loss of life, property damage and social disruption if developed (e.g., flood plain, steep slopes, unstable soils, etc.).

INDIVIDUAL ENVIRONMENTAL ASSESSMENT - see Full Environmental Assessment.

INTERMITTENT WATER COURSES - all water courses which discharge periodically after heavy rains or spring breakup, and which may become dry at times.

MINISTER/MINISTRY - refers to the Minister/Ministry of the Environment.

NEW SEWAGE OR WATER SYSTEM - refers to the construction of a sewage or water facility wherein there is no physical connection with an existing sewage or water facility through property or process link.

NOTIFICATION - where notice is given or service is made by registered mail, the giving or service shall be deemed to be made on the seventh day after the day of mailing, unless the person to whom notice is given, or on whom service is being made, establishes that he did not, acting in good faith, by absence, accident, illness or other cause beyond his control, receive the notice, order, approval or other document until a later date.

Where a municipality is of the opinion that because the persons who are to be given notice are so numerous, or for any other reason it is impracticable to give the notice to all or any of the persons individually, the municipality may instead of doing so, cause the notice to be given to the persons by public advertisement or otherwise as the municipality may direct, and the date on which such notice is first published or otherwise given as directed, shall be deemed to be the date on which the notice is given.

OPERATION - means operating, maintaining and repairing where the purpose, use, capacity and location remain the same.

Same purpose, use, capacity and location refers to the replacement and/or upgrading of a structure or facility or its performance, where the objective and application remain unchanged, and the volume, size and capability do not exceed the existing rated capacity (defined above), and there is no substantial change in location. If there is any doubt as to whether a change in location is or is not substantial, an opinion should be obtained from the potentially affected government agencies and members of the public. For example, a sewage system which was certified under the Ontario Water Resources Act to operate at 3 MGD, but which was only constructed to operate at 2 MGD, can be expanded by up to 1 MGD, at its existing site, and that expansion would qualify as an operations activity.

PROJECT - refers to a specific activity planned and implemented in accordance with a Class EA approval. A project consists of all those activities necessary to solve a specific sewage or water problem. For purposes of the Class EA process, a project should not be broken down into component parts, with each part addressed separately. For example, consider a proposed water distribution system that includes a pumping station. The entire distribution system and the pumping station must be handled as one project rather than as two separate projects. If the component actions are

interdependent, then all of the components should be dealt with as a single project. It is not acceptable to piece-meal - or break up - a large project into smaller component actions for the purpose of reducing responsibility under the Act.

A project can be proposed in response to a larger activity. For example, some storm sewer works might be associated with a municipal road widening project. If the storm sewers are proposed in isolation they would be an activity subject to this Class EA. If the storm sewers are proposed merely in response to the road project, the sewers would not be subject to this Class EA but would be treated as an effect of the road project and would be dealt with under the Municipal Roads Class EA.

Where a project consists of components having differing statuses under the Act if carried out separately, the entire project shall take on the status of the component requiring the more rigorous treatment. For example, in the case of a sewage project consisting of the establishment of new lagoon cells and an extension to existing collection system, the sewage project would fall into schedule C and be subject to Class EA procedures.

PROPONENT - for the Class EA document, the proponent is the municipality or group of municipalities who submit the document to the Minister for approval under the EA Act. For a project planned in accordance with the approved Class EA, the proponent is the Municipality or Public Utilities Commission developing the project in accordance with the requirements of the Class EA, as approved under the EA Act.

PUBLIC - includes interest groups, associations, utilities and individuals.

RETIREMENT - is the taking out of operation, abandonment, removal or disposal (including sale or demolition) of a facility.

REVIEW AGENCIES - refers to government agencies other than the proponent.

SCREENING - refers to the contact made by the proponent with agencies of the government, adjacent property owners, and the potentially affected public for the purpose of giving notification of, and soliciting comments on, a proposed project.

SEWAGE - refers to sanitary wastes, drainage, storm water, commercial wastes and industrial wastes.

SEWAGE COLLECTION SYSTEM - refers to service branches, trunk and local sewers, pumping stations and storm sewage ponds, and appurtenances which include catch basins, inlet control devices, leads and manholes, but does not include any sewage treatment facilities.

THE ACT - the Environmental Assessment Act or the EA Act.

UNDERTAKING - in the case of a Class Environmental Assessment, the term undertaking refers to a project that is within the definition of the group of activities which is covered by the Class EA, and which is planned in accordance with the process set out in the Class EA.

UTILITY CORRIDOR - means land or rights to land for purposes of locating sewage, water, power or other such services.

WATER CROSSING - the provision of a collection or distribution system over or under watercourses including lakes, rivers, canals, ponds, bogs, marshes, swamps, creeks, streams, etc.

WATER DISTRIBUTION SYSTEM - refers to service connections, supply, trunk and local distribution mains, pressure reduction stations, pumping stations and storage facilities and appurtenances which include hydrants, valves and chambers but does not include any water treatment facilities.

1.0 INTRODUCTION

1.1 PREFACE

A Class EA is a planning procedure developed to ensure that the potential social, economic and natural environmental effects are considered in planning certain projects. Under the Class EA, the proponent of a proposed project does not have to apply for formal approval under the Act provided it is planned in accordance with the approved procedure. The Class EA, therefore, provides a significant relief from the individual application of the Environmental Assessment Act, while still achieving its purpose by incorporating environmental considerations into a municipality's ongoing project planning.

This document is referred to as a Class EA. It describes what a Class EA is and the group of projects which are included in the Class. It also describes the purpose of the projects and the process leading to their construction.

The operation, maintenance or retirement of facilities under the Class Environmental Assessment may influence the significance of environmental impacts. In most cases, these impacts will be limited, but in some cases, major impacts may result. It is expected that the significance of impacts will be identified during the course of the planning process, and effective mitigation chosen, or the project will be reassessed.

A project is initiated in response to a specific problem(s), and is the result of a solution determination process. It is then usually scheduled for construction. By this time, planning decisions associated with the project have already been made. A description of this initial decision making process is described in this document under "Section 2.0, The Planning and Design Process".

Component parts of the process, such as, defining and establishing the purpose of a project, considering alternatives to the project, establishing the environment affected, determining the effects of the project on the environment and methods of minimizing such effects, are described in this class document.

It should be noted that municipalities' proposing communal facilities, regardless of the manner in which the facilities are to be funded, will be expected to enter projects into the approved planning and design process. This includes facilities funded under the "up-front grant" program.

The Class EA document will deal with all municipal sewage and water projects. Projects having minor environmental significance and not requiring the full class process, are approved, subject to a screening process: these projects are described in Schedule B of Appendix 1.

Projects of a very small scale are approved under the Class EA: these projects are described in Schedule A of Appendix 1. The Municipality or Public Utility Commission, when considering operational and maintenance activities, will have regard for the heritage value of the items involved.

The Class EA document recognizes that at the time it is approved, various projects will be at different stages in the planning process. To accommodate this, a "phasing-in" provision is provided. This phasing-in provision permits a project to enter the planning process at whatever stage it is at, **on the day on which the Class EA is approved (April 9, 1987).** For example, if the need for a project has already been established, and planning is to a stage where a preliminary design has already been selected, it is only necessary to enter the planning stream at that point. A detailed description of how projects may be "phased-in" follows.

1.2 PROVISION FOR PHASING PROJECTS INTO CLASS EA

It is recognized that municipalities cannot suspend work on construction projects while waiting for a municipal class document to be prepared. Accordingly, at the time such a document is approved, specific projects will be at different stages in the planning process. Some will be at a stage where a preferred solution to the problem has been selected, some may have a preferred design concept selected, and some may even have construction drawings and contract documents prepared. It would be unrealistic to expect such projects to be restarted to allow for the full planning process in accordance with the Act. Accordingly, a phasing-in provision is provided.

The phasing-in provision permits a project at an advanced stage of planning to enter the Class EA planning process at its current stage. An "advanced stage" of planning means any point in the planning process beyond Phase 1, up to the commencement of the preparation of contract drawings (see flow chart). In such cases, the ESR shall document the planning procedure following from the stage most recently completed. For instance, take the case of a sewage project involving the establishment of a new lagoon facility, which is in the preliminary design stage of the planning flow chart. In this instance, the project justification has already been established, the preferred solution to the problem identified, and the best method of implementing the preferred solution selected.

There is no need to become involved in these phases of planning again. The ESR shall document the status of the project from the time the Class EA is approved, and shall document the remaining planning requirements, including construction impact mitigation measures. The ESR shall also outline the monitoring required during construction to fulfil the commitments of the planning process, and the proponent may, where he considers necessary, for certain unique projects under special conditions, also include a commitment to monitor the operation of the completed project for stated periods of time.

Such will be the case with projects at other stages in the planning and design process. Simply stated, when projects are in progress at the time the Class EA is approved, they need only follow the prescribed Class EA planning process from that point on. Documentation in the ESR will explain this. **However, if a project reaches the contract drawing stage (shown on the flowchart on p. 6) by October 11, 1987, the proponent of the project need not comply with the other requirements of this approval.**

"Contract drawing stage" means that stage where the planning and design of a project is complete such that drawings to be used for tendering purposes or during construction can be prepared for signature by the senior municipal official authorized for such purposes.

Because the phase-in provision is an interim measure, its use will terminate three years and six months after the approval of the Class EA. However, exception may be granted to long term projects where substantial progress has been made throughout the three-year and six-month phase-in period.

2.0 PLANNING AND DESIGN PROCESS

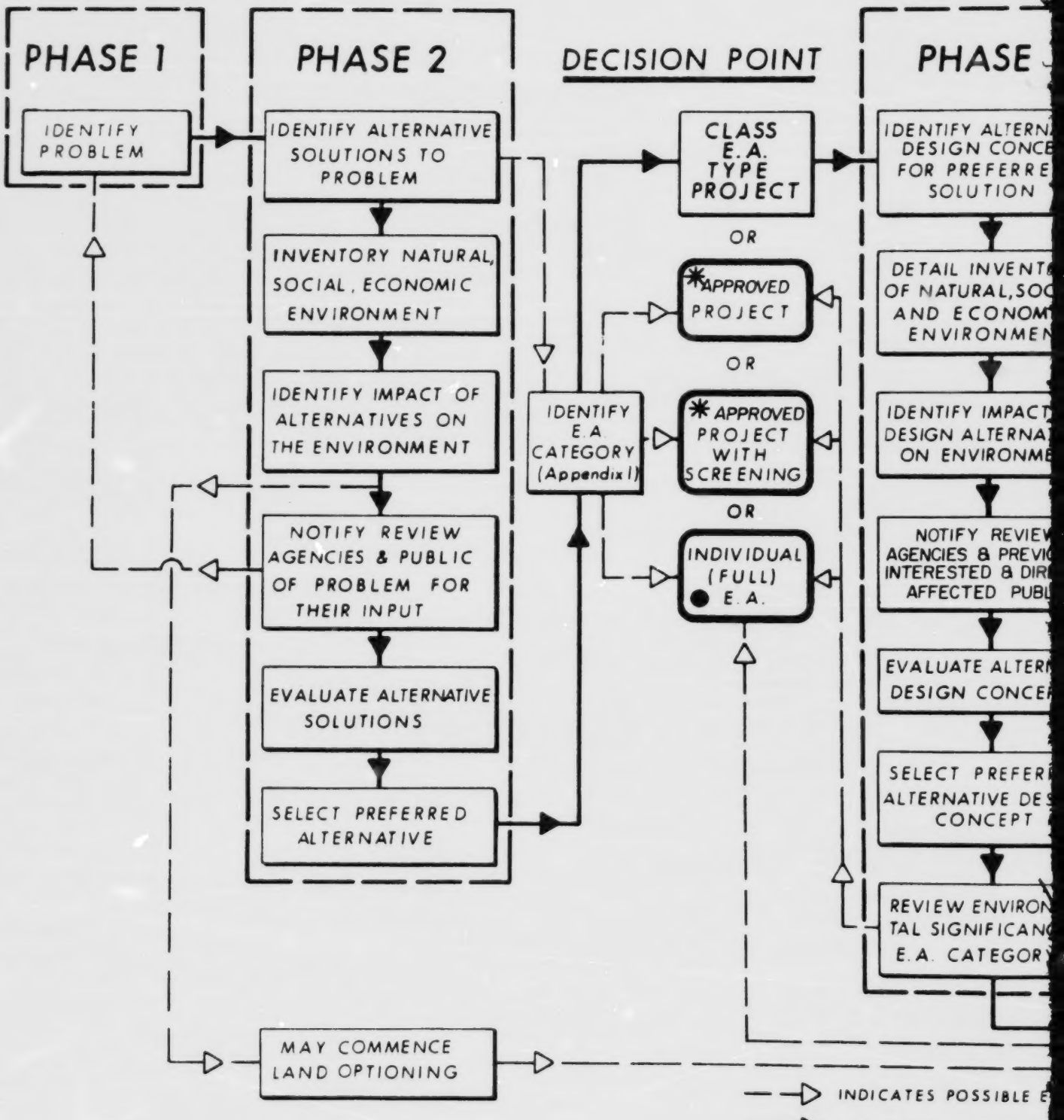
PLANNING AND DESIGN PROCESS

FOR

CLASS EA TYPE

MUNICIPAL SEWAGE AND WATER PROJECTS

PLANNING & DESIGN PROCES
MUNICIPAL SEWAGE AN


PHASE 1
IDENTIFY PROBLEM
PHASE 2
IDENTIFY ALTERNATIVE SOLUTIONS TO PROBLEM
INVENTORY NATURAL, SOCIAL, ECONOMIC ENVIRONMENT
IDENTIFY IMPACT OF ALTERNATIVES ON THE ENVIRONMENT
NOTIFY REVIEW AGENCIES & PUBLIC OF PROBLEM FOR THEIR INPUT
EVALUATE ALTERNATIVE SOLUTIONS
SELECT PREFERRED ALTERNATIVE
DECISION POINT
IDENTIFY E.A. CATEGORY (Appendix I)
CLASS E.A. TYPE PROJECT
OR
*APPROVED PROJECT
OR
*APPROVED PROJECT WITH SCREENING
OR
INDIVIDUAL (FULL) ● E.A.
PHASE
IDENTIFY ALTERN DESIGN CONCE FOR PREFERRE SOLUTION
DETAIL INVENT OF NATURAL, SOC AND ECONOM ENVIRONMEN
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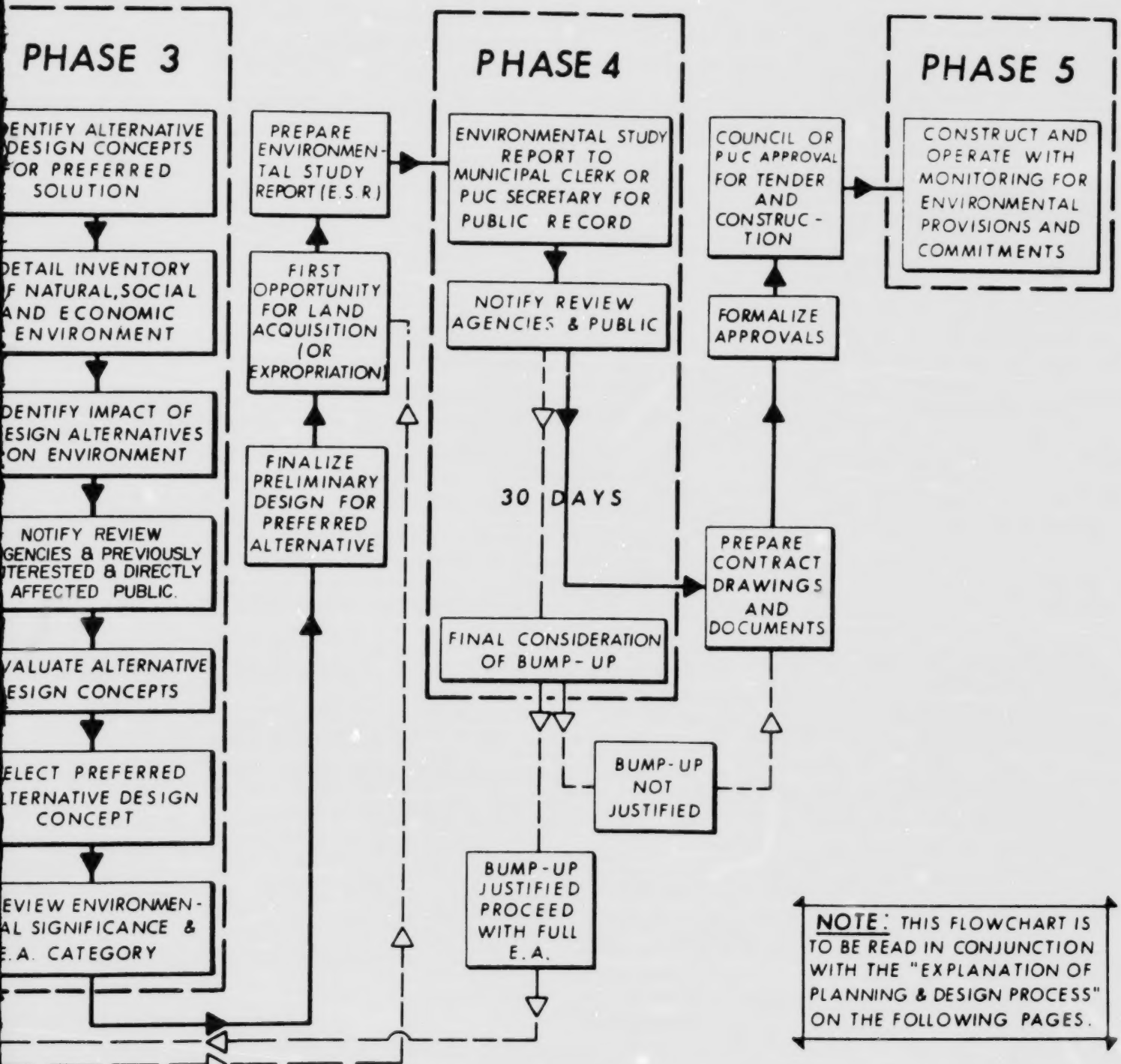
N PROCESS FOR CLASS E.A. TYPE WAGE AND WATER PROJECTS


PHASE 3
DENTIFY ALTERNATIVE DESIGN CONCEPTS FOR PREFERRED SOLUTION
DETAIL INVENTORY F NATURAL, SOCIAL AND ECONOMIC ENVIRONMENT
DENTIFY IMPACT OF ESIGN ALTERNATIVES ON ENVIRONMENT
NOTIFY REVIEW GENCIES & PREVIOUSLY TERESTED & DIRECTLY AFFECTED PUBLIC.
VALUATE ALTERNATIVE ESIGN CONCEPTS
ELECT PREFERRED LTERNATIVE DESIGN CONCEPT
EVIEW ENVIRONMEN- AL SIGNIFICANCE & E.A. CATEGORY
PREPARE ENVIRONMEN- TAL STUDY REPORT (E.S.R.)
FIRST OPPORTUNITY FOR LAND ACQUISITION (OR EXPROPRIATION)
FINALIZE PRELIMINARY DESIGN FOR PREFERRED ALTERNATIVE
PHASE 4
ENVIRONMENTAL STUDY REPORT TO MUNICIPAL CLERK OR PUC SECRETARY FOR PUBLIC RECORD
NOTIFY REVIEW AGENCIES & PUBLIC
30 DAYS
FINAL CONSIDERATION OF BUMP-UP
BUMP-UP NOT JUSTIFIED
BUMP-UP JUSTIFIED PROCEED WITH FULL E.A.
PREPARE CONTRACT DRAWINGS AND DOCUMENTS
FORMALIZE APPROVALS
COUNCIL OR PUC APPROVAL FOR TENDER AND CONSTRUC- TION
PHASE 5
CONSTRUCT AND OPERATE WITH MONITORING FOR ENVIRONMENTAL PROVISIONS AND COMMITMENTS

NOTE: THIS FLOWCHART IS TO BE READ IN CONJUNCTION WITH THE "EXPLANATION OF PLANNING & DESIGN PROCESS" ON THE FOLLOWING PAGES.

TES POSSIBLE EVENTS

TES MANDATORY EVENTS

✱ PROPONENT MAY PROCEED WITHOUT PREPARING E.S.R.

● SEE GLOSSARY

PREPARED BY:
MUNICIPAL ENGINEERS' ASSOCIATION
COMMITTEE ON CLASS ENVIRONMENTAL ASSESSMENTS

2.2 EXPLANATION OF PLANNING AND DESIGN PROCESS FOR MUNICIPAL SEWAGE AND WATER PROJECTS

DESCRIPTION OF CLASS EA PROCESS

The preceding flow chart illustrates the process followed in the planning and design of projects covered by this Class EA. The chart incorporates steps considered essential for compliance with the requirements of the Act. Steps required by the Act may be summarized as follows:

Phase 1 Identify the problem, i.e., determine the justification for a project.

Phase 2 Identify alternative methods of resolving the problem, bearing in mind environmental considerations, and establish the preferred solution.

Phase 3 Examine alternative methods of implementing the preferred solution, taking into consideration environmental effects, and methods of minimizing negative effects and maximizing positive effects.

Phase 4 Document, in an ESR, a summary of the rationale behind the project as established through the above process and make such documentation available for scrutiny by review agencies and the public.

Phase 5 Monitor construction to ensure adherence to environmental provisions in the specifications, to reflect the concerns raised during the planning and design process. In certain cases, where special conditions dictate, also monitor the operation of the completed facilities.

The following details what is involved in each of the above five phases.

Phase 1

At present, most municipalities undertake projects only in response to certain identified deficiencies. Typical deficiencies include: poor effluent/water quality, inadequate flow or pressure for peak demands/fire protection, increased demand in a developing area, high operating/maintenance costs, etc. These problems may or may not be obvious to the public and the municipality, or identified as needing a certain type of improvement. Under the Act, it will be necessary to document factors which lead to the conclusion that improvement is needed.

Phase 2

Prior to the Act, improvements required to correct an existing deficiency may have been developed through an intuitive process which considered, primarily, criteria established by the Ontario Ministry of the Environment, the American Water Works Association (AWWA), the

Insurers Advisory Organization (IAO), financial constraints, and/or political demands. In some cases, this intuitive process did not consider impacts on the surrounding social and natural environments. The planning process required by the Act entails not only a documentation of the intuitive process, but a much more comprehensive review procedure. This shall involve:

1. Identification of alternative methods of solving the problem. For example, where a water system capacity problem exists, there are many solutions, such as to:

    a) establish a new water system,
    b) expand or upgrade the existing water system,
    c) institute improvements in operation and maintenance,
    d) reduce water demand through conservation measures,
    e) do nothing.

This document is not intended to impose the Class planning process on activities which are Approved or Approved Subject to a Screening Process. Maintenance or activities related to operation of an existing facility are approved under the Class EA.

The Proponent should:

1. Identify the problem (Phase 1).

2. Identify alternative solutions to the problem (Step 1 of Phase 2).

At this point, the proponent may arrive at the conclusion that the preferred solution is an activity which is, Approved, and therefore need not proceed further with respect to environmental assessment, or, Approved Subject to Screening, and therefore must follow the screening process.

If the proponent considers that the preferred solution may fall into Schedule C, the proponent shall follow the planning and design process of the Class Environmental Assessment.

Where the undertaking falls in Schedule C it should be noted that maintenance, operation and retirement activities are considered as part of the undertaking for the purpose of the identification and analysis of alternatives and their environmental effects.

2. Preparation of a physical description of the area where the project is to occur, and an inventory of the natural, social and economic factors which are to be considered when reviewing the effects of a project in that area.

3. Identification of the magnitude of the positive and negative effects of each alternative in Point 1, with respect to the environmental factors identified in Point 2.

At this point options or conditional agreements for land acquisition may be obtained; however, land may not actually be acquired until after the completion of Phase 3.

4. Notification of review agencies and the public to solicit input. By making all interested parties aware of the problem and the area where the problem exists, certain other pertinent factors may come to light. Review agencies to be contacted, unless it can be concluded that they have no interest in the project, include:

   a) Min. of Agriculture and Food (County Agricultural Representative)
   b) Min. of Community & Social Services
   c) Min. of Citizenship and Culture (Regional Archaeologist)
   d) Ministry of Energy
   e) Min. of Health, (Local Health Office, Medical Officer of Health)
   f) Min. of Housing
   g) Min. of Industry, Trade and Technology
   h) Ministry of Municipal Affairs
   i) Min. of Natural Resources (District Manager)
   j) Min. of Northern Development and Mines
   k) Min. of Transportation and Communications (District Office)
   *l) Min. of the Environment (District Office)
   m) Conservation Authority
   n) Niagara Escarpment Commission
   o) Ontario Hydro
   *p) Affected municipalities

   * To be contacted in all situations.

   Methods of contacting the public include: individual notification, newspaper advertisements, or public notices posted in prominent locations. At this stage, it is important to make it perfectly clear that only those who respond within a specified reasonable time frame, and those directly affected by the undertaking, will receive notification during later stages of planning and design.

5. Evaluation of identified possible solutions, taking into consideration environmental and other factors, and selection of a preferred solution.

It must be borne in mind that the process identified above is not necessarily sequential. It could be an iterative process whereby the results of one step may necessitate re-evaluation of a previous step. For instance, under Point 2, factors to be considered would be identified; however, contact with the public and external agencies in Point 4 may bring to light additional factors which should be considered. Similarly, the economic situation may change such that the whole project must be re-assessed. It should also be understood that the proponent need only gather and document that information which is likely to have a direct bearing on impacts and mitigating measures. The level of detail of the information to be inventoried should reflect the potential severity of the impacts predicted.

As indicated earlier, an informal, intuitive process, similar to that described above occurs now for most municipal projects but may not be documented. Under the Act, it will be necessary to formalize the intuitive process such that the justification for a project and the selection of the preferred solution are documented.

THE PLANNING PHASE OUTLINED IN PHASE 2 WILL LEAD THE PROPONENT TO THE CONCLUSION THAT THE PROJECT IS: APPROVED: APPROVED SUBJECT TO THE SCREENING CRITERIA: SUBJECT TO THE CLASS ENVIRONMENTAL ASSESSMENT: OR IS SUBJECT TO INDIVIDUAL ENVIRONMENTAL ASSESSMENT.

This is a decision point, and the following discussion outlining Phases 3, 4 and 5 assumes that the proponent has concluded the project is subject to this Class EA, based upon its scale and environmental significance.

If, on the other hand, the proponent concludes that the project is approved, then no further action need be taken with respect to the EA Act. The project may be developed immediately, subject to the requirements of any other statutes having application, such as the Ontario Water Resources Act.

If the proponent concludes the project is approved subject to the screening criteria, then the contacts described in the screening criteria shall be made prior to the project being developed. For this type of project no documentation is required to be prepared.

If the proponent concludes that the project should be subject to an individual environmental assessment, then it is suggested that the planning steps described in the Class EA be undertaken. Following the Class EA planning process is not mandatory for individual EA's; however, it is recommended, as the completion and documentation of these planning steps will result in the preparation of an acceptable individual environmental assessment document. Unlike the procedures for Class EA type projects, the documentation of planning for projects subject to individual EA is termed an environmental assessment document and this document is submitted to the Minister for approval, prior to the project being permitted to be developed.

The proponent may contact the parties who have expressed an interest in the decisions which are being made on a project, to inform them of the conclusions which are reached at the end of Phase 2 or Phase 3, respecting the status of the project under the EA Act: i.e. the project is: approved; approved subject to screening; or subject to Class EA procedures.

Phase 3

Phase 3 proposes a formal process similar to that presented in Phase 2. The difference is that rather than dealing with alternative solutions, alternative design concepts for implementing the preferred solution are investigated. Actions to be taken are:

1. Identification of alternative design concepts for the preferred solution. For instance, in the case of a water system capacity problem, it may be determined in Phase 2 that upgrading the existing distribution system is the best solution. For this solution, there are various alternatives:

   a) replace existing mains with larger mains,
   b) replace existing mains with mains of the same size but with better hydraulic characteristics,
   c) clean and/or reline existing mains,
   d) provide new or additional storage,
   e) increase pumping capacity.

2. Preparation of a detailed inventory of the natural, social and economic environment. At this point, rather than dealing with the general environment of the area, the particular components of the environment which must be considered and compared with each other shall be identified in detail. However, this need only be carried out to the extent necessary to select a preferred design.

3. The impact of each alternative design concept on the environment inventoried above will then be established. By so doing, it is possible to compare the relative merit of each design concept.

4. Input from those who expressed interest or provided input in Phase 2 and those directly affected by the undertaking will again be solicited. Generally, interested parties are advised that a preferred solution has been selected and are given some detail as to what comprises it. It would be well to point out to those interested that the preferred solution was selected only after serious consideration of all environmental factors, including their previous input. At this point, they may wish to provide input with respect to specific concerns related to the alternative design concepts.

5. As in Phase 2, having identified all environmental factors which may be affected, having determined steps essential to minimizing impact on the environment, having gained further input from interested parties, and having a number of design concepts to consider in light of these factors, it is now possible:

   a) to update the environmental significance of the preferred concept, and thereby determine whether the project is approved, i.e., no further action with respect to the Environmental Assessment Act is necessary; whether the project is approved with screening, where the proponent must

ensure that the necessary contacts have been made; whether an individual assessment procedure must ensue; or whether further steps in the Class EA process are in order; and

b) where appropriate, to select the preferred design concept for final design and construction.

Following Phase 3, preliminary design can be completed. At any time during the planning and design process, the MOE Approvals Branch may be contacted if the proponent requires assistance in clarifying design criteria. Council or Public Utilities Commission approval may be obtained, if required, for submission of an ESR.

At this point in the process, land acquisition, including expropriation where required, may be completed. Such acquisition shall not prejudice the proponent's decision to proceed nor be given weight in any decision on the undertaking.

Phase 4

Phase 4 represents the culmination of the procedures followed during planning and design for compliance with the Act. An ESR is prepared which illustrates the planning and decision-making process which has been followed, and the mitigating measures and monitoring procedures that shall be taken to ensure that the Act has been adhered to. Depending upon the magnitude of the project, the ESR will document:

1. A description of:

   a) the problem and other background information,

   b) the rationale employed in selecting the preferred solution to the problem,

   c) the rationale employed, including information and trade-offs made, in selecting the preferred design concept.

2. A summary of the involvement of review agencies and the public.

3. A summary of environmental considerations.

4. The mitigating measures which shall be undertaken to minimize the effects of the project on the environment before, during and after construction.

5. Any "Special Provisions", "Contract Specifications", operations procedures, or special design features which will be necessary to protect the environment. These must be included in the construction package or operating manuals, such that they become a responsibility of the contractor and the municipal representatives inspecting the work, and those who will operate the system.

6. The monitoring program will be carried out during construction and, if necessary, for a specific time of its operation.

The ESR is filed with the Municipal Clerk or Secretary of the Public Utilities Commission, and shall be available for public review for at least 30 days after notification of its filing.

If objections result within the 30 day period, there shall be an attempt by the proponent to resolve the problem with the objector. If this fails, however, it then becomes the responsibility of the Minister to decide whether the objection is justified, and therefore, whether further environmental assessment is required, i.e., by the bump-up provision. (See Section 5.1)

After the 30-day period, the ESR shall be maintained on file for public review.

Phase 5

The ESR itself, shall point out the effects of a project on the environment, and the mitigating measures, if any, to be taken to eliminate or minimize such effects. It will, therefore, be necessary for the proponent to monitor construction, and in some cases operation, to ensure that such measures take place.

Major, complex projects, possibly utilizing extensive new technology, may take several years to design, construct and put into operation. Such projects will require monitoring during construction and may also demand ongoing monitoring as part of the day to day operation of the facility. Ongoing monitoring of facility operation (for example, the sampling of specific but unusual constituents of the effluent of a major sewage treatment plant discharging into sensitive receiving waters), may become a permanent feature of the operating procedures throughout the lifetime of the facility. For other facilities, it may only be necessary to monitor operation for a limited time. This may be adequate to determine if design predictions have been achieved, and commitments met.

Other projects with minor or insignificant impacts on the environment may require little or no monitoring beyond the routine enforcement of standard specification requirements relating to construction activities.

In all cases, the ESR shall define the objectives of the monitoring program, and shall document specific requirements for monitoring that are appropriate to the particular circumstances and conditions in which the project will be constructed.

2.3 EXPLANATION OF THE RELATIONSHIP OF PROJECTS WITHIN THE CLASS EA TO THE ONTARIO WATER RESOURCES ACT (OWRA) AND THE ENVIRONMENTAL PROTECTION ACT (EPA), INCLUDING PROVISIONS FOR HEARINGS

Municipal sewage and water systems must receive approval under the OWRA. Certain other sewage projects (e.g., processed organic waste - sludge - management activities including sludge disposal and utilization) must receive approval under the EPA. The EA Act and, hence, the Class EA process is oriented towards the general planning decisions associated with a project's development. Water and sewage facilities involve relatively complex technology, and for this reason engineering decisions must be reviewed in greater detail than the scrutiny normally afforded by the EA Act's review of engineering aspects. Therefore, technical approvals must still be obtained under both the OWRA and the EPA.

For projects being developed under the procedures of the Class EA, final Certificates of Approval may only be issued under the OWRA and the EPA after the termination of the review period following notification of the submission of the ESR or, if appropriate, submission of an addendum to the ESR.

Both the OWRA and the EPA contain provisions for holding hearings on municipal sewage and water projects. Thus, projects developed under Class EA procedures may be subject to hearings under the OWRA and the EPA, and may also be subject to hearings under the EA Act, where the projects are "bumped up" out of the class, and hearings are required pursuant to individual EA approvals.

It is not appropriate that projects proceeding under the Class EA, which are not bumped up, should be subject to hearings under the OWRA or the EPA. The purpose of the Class EA process is to establish planning procedures that ensure that the potential social, economic and natural environmental effects are considered in the planning of projects which can generally be characterized as having moderately significant effects. The procedures for involving review agencies and the public in a project's planning, (which are an integral part of the Class EA process), effectively achieve the same purpose as formal hearings.

It is also not appropriate that projects which are bumped-up to individual EA status, and for which a hearing under the EA Act is required, should also be subject to hearings under the OWRA or the EPA.

Regulations have been passed under the OWRA (O. Reg. 207/87), and EPA (O. Reg. 206/87), which dispense with hearings under these Acts for Class EA undertakings.

The following three scenarios summarize the route a project may take in respect to the EA Act and the OWRA and the EPA:

i. No Bump-Up/No Hearing:

A project is developed under Class EA procedures. The project is not bumped-up, complies with all of the requirements of the Class EA, and final design is approved under the OWRA or EPA.

ii. Bump-Up/No Hearing:

A project is developed under Class EA procedures. The project is bumped-up to individual EA status. All concerns are resolved during the course of development of the EA and a hearing is not required. Once approval under the EA Act is received, final approval may be given under the OWRA or the EPA.

iii. Bump-up/EA Act Hearing:

A project is developed under Class EA procedures. The project is bumped-up to individual EA status and the Minister requires that a hearing under the EA Act be held. The hearing would deal with all matters at issue, including any engineering issues. Once approval under the EA Act is received, final approval may be given under the OWRA or the EPA.

The Consolidated Hearings Act, 1981

A project that is being developed under the Class EA might become the subject of a number of hearings under a variety of provincial statutes. For example, hearings might be required under the EA Act, once a project was bumped-up; before the Ontario Municipal Board, to provide the host municipality with authority to enter into debt financing; under the Planning Act, where an associated official plan or amendment has been referred to the Ontario Municipal Board by the Minister of Municipal Affairs or a delegated authority, or where a municipality has forwarded a related zoning by-law to the OMB for approval; and under the Expropriations Act, to obtain sites.

Some projects may be subject to two or more hearings before more than one tribunal, under any of the statutes referred to in the Consolidated Hearings Act, 1981. Where planning for such a project has reached a point when issues such as land use planning and financing can be considered in a common forum, a municipality may wish to consider utilizing the mechanisms of The Consolidated Hearings Act, 1981, under which only one hearing is required.

3.0 DESCRIPTION OF THE PROJECTS, PURPOSE AND ALTERNATIVES

3.1 WATER PROJECTS

3.1.1 DESCRIPTION OF THE UNDERTAKINGS

Projects within this Class can generally be described as new water systems, expansions to water systems or upgradings of water systems. A new water system refers to a project which will include a water source, treatment plant and distribution system.

An expansion refers to the addition of new equipment, facilities or management practices to increase system capacity. An upgrading consists of additions or replacements to existing equipment, facilities or practices which are intended to achieve a higher level or quality of system performance, while not increasing system capacity.

To solve an individual problem it may be necessary to develop a new water system or to expand and/or upgrade the existing system.

Following is an overview of the typical components of a water system, to identify where undertakings within this Class would fit within the total system.

Water System Components

In this document, water systems include three major components:

- source
- treatment
- distribution

The source of water for a community may be either from a surface water body (such as a lake or river) in which case an intake pipe extends into the water body, or from a groundwater aquifer, in which case water is pumped from a well or wells. Some municipalities may utilize both water sources, for example, where one community in the municipality draws its water from a well while another uses a surface water source. In addition, many residential and commercial areas, industrial plants and most rural residences are served by individual wells.

The quality of the source of water supply is what mainly determines the degree and type of treatment necessary. Where the community draws its water from a surface water source, treatment will be necessary because surface water contains bacteria, and may be turbid, coloured or contain algae or other organics, or may suffer some other quality defect. Where the community is serviced by a communal well or wells drawing on groundwater supplies, treatment may or may not be necessary.

The treatment component will typically comprise a water treatment facility within which the incoming water is treated and pumped into the distribution system.

The water distribution component for communal systems will consist of watermains and may also include booster pumping stations and storage facilities.

In this Class EA typical projects may include the construction of one or more of the following:

- New water system.
- Source component.
- Treatment component.
- Distribution component.

Most projects in this Class will alter the physical characteristics of the respective water systems by requiring, for example:

- construction of new facilities or additions to existing facilities such as impoundments, settling tanks, pipe galleries and buildings;
- acquisition of additional land to house the facilities, either at existing sites or new locations;
- extension of existing easements or utility corridors for watermains;
- acquisition of additional land to maintain the appropriate "buffer zone" between adjacent uses and water treatment plant, booster pumping station or the storage facility.

3.1.2 PURPOSE OF THE UNDERTAKING

The projects in this Class will be proposed to resolve problems affecting the operation and efficiency of existing water systems, to accommodate future growth of communities or to alleviate water source pollution problems.

One or more of the following general objectives will be achieved:

A. Reduce public health problems or nuisances.

B. Improve the quality of water.

C. Expand the capacity of the system.

D. Improve system efficiency.

E. Prevent system failure.

F. Improve disposal of treatment wastes.

The purpose or objective of a specific project will be determined by the present or forecasted problem(s) affecting operation and efficiency, and the present or forecasted demand for increased system capacity.

The purpose of a project will be documented in the ESR.

The following subsections describe the types of problems and demands:

A. Public Health

The well-being of human life may be affected or nuisances may be caused by such problems as:

- groundwater pollution;
- contamination of the water through the distribution system;
- noise resulting from the operation of the water treatment plant or booster pumping stations.

B. Water Quality

Water may not conform to the water quality objectives as a result of such factors as:

- deterioration in quality of the water source;
- change in Ministry policies and guidelines for water quality objectives;
- inefficient operation of the water treatment plant;
- outdated original design and/or construction of the water treatment plant.

C. System Capacity

The existing water system may not be able to supply the quantities of water required, or to supply water at the required pressure due to such factors as:

- escape of water (exfiltration) from the water distribution network;
- deterioration in the condition of the distribution system;
- outdated original design and/or construction of the system;
- system unable to meet new demands since it is at or very near to its original design capacity;
- failure of the water source;
- changes in design philosophy which affect capacity requirements.

D. System Efficiency

Various facets of system efficiency such as labour, maintenance costs or energy consumption may be improved by design improvements and/or the introduction of new technology.

The system may be considered inefficient for various reasons including:

- increased cost of maintaining existing equipment;
- increased energy consumption;
- equipment does not meet performance specifications;
- outdated original design of system.

E. Potential System Failure

Concern may be expressed as to potential system failure due to such factors as:

- deterioration of system components due to age;
- repeated equipment breakdown over time;
- evidence of structural failure over time;
- outdated original design and/or construction of the system.

F. Disposal of Treatment Wastes

The existing water treatment plant may exhibit problems related to the disposal of wastes generated, which may be attributed to:

- excessive frequency of backwashing;

- changes in Ministry policies and guidelines; with respect to disposal of chemical sludge and backwash water.

3.1.3 ALTERNATIVES TO THE UNDERTAKING

In many instances, there may be more than one way of solving problems or meeting new demands or requirements for water systems. Solutions other than a new water system, or an expansion or upgrading, which may also be considered, are called "Alternatives to the Undertaking", some of which are listed below:

A. Modify Operational Practices at the Water Treatment Plant.

B. Expand Maintenance Program.

C. Reduce Water Demand.

D. Obtain Water from Another Source.

E. Limit Community Growth.

F. "Do Nothing".

Depending on the nature of the existing water system and on the problems being encountered or forecasted, there are variations in the ways these general "Alternatives to the Undertaking" could be carried out. The most common of these variations are described in the following subsections.

In reviewing these subsections there are a number of factors that should be kept in mind:

- A water system consists of interrelated components. Therefore, many of the potential "Alternatives to the Undertaking" may resolve more than one of the general problems previously described.

- The feasibility of the "Alternatives to the Undertaking" will depend, in part, on the nature and location of the water system, the nature and location of the problem(s), the comparative cost of the alternative solutions, the pressures for growth, and on the municipality's capacity to finance the extension of services.

- It is possible that the only feasible solution to the problem(s) may be an expansion and/or upgrading project in this Class. Conversely, there may also be one or more feasible "Alternatives to the Undertaking" which merit consideration.

- Where the final recommended solution is a project of the type described in this Class, the "Alternatives to the Undertaking" will be documented in the ESR.

The following alternative actions may solve one or more of the general problems previously described:

A. Modify Operational Practices at the Water Treatment Plant

- Limit operating hours of noisy equipment to reduce sound level impacts on adjacent residents and uses.
- Ensure that the operator of the water treatment plant is following proper procedures to adhere to the required degree of treatment.
- Modify operational procedures at the water treatment plant by altering procedures for equipment operation and chemical addition.
- Undertake training programs to upgrade the operator's understanding of treatment procedures and Ministry policies, guidelines and practices.
- Modify operational procedures and/or processes to reduce the quantities of backwash wastewater or chemical sludge requiring disposal.

B. Expand Maintenance Program

- Increase frequency of "flushing-out" and cleaning of the distribution system to improve hydraulic capacity and water quality.
- Undertake maintenance activities such as, (i) equipment overhaul and replacement of faulty or damaged parts, and (ii) locate and repair faults causing contamination in the water distribution component.
- Trace and monitor leakage in the water distribution system and undertake a program for its reduction.

C. Reduce Water Demand

- Initiate a water conservation program to educate both the general public and industrial users of ways to reduce water usage.
- Adopt a municipal by-law directed at reducing water usage.
- Install individual water meters at each point of water usage and charge on the basis of volume used rather than a flat rate.

D. Obtain Water from Another Source

- Provide for extension of watermains from another municipality into that part of the community requiring additional supply.
- Abandon existing water source and extend watermains from another municipality into the needy community.
- Abandon existing groundwater source and develop new water source and treatment at surface water source.

E. Limit Community Growth

- Limit the ultimate extent and/or location of proposed residential, industrial and commercial growth in the community.

- Phase or schedule proposed growth in the community with respect to both location and implementation timing.

F. "Do Nothing"

In the "Do Nothing" alternative, no improvements or changes would be made to solve the identified problem(s). This means that the problem(s) would remain in the system. It does not necessarily mean, however, that no further development in the community would occur.

Where an expansion and/or upgrading project in this class is one of the alternative solutions considered, and is the recommended solution, the "Do Nothing" alternative will also be investigated.

The "Do Nothing" alternative will be documented in the ESR along with any other alternatives to the undertaking which were examined.

The "Do Nothing" alternative may be implemented at any time during the Design Process prior to the commencement of construction. A decision to "Do Nothing" would typically be made when the costs of all other alternatives, both financial and environmental, significantly outweigh the benefits.

3.2 SANITARY SEWAGE PROJECTS

3.2.1 DESCRIPTION OF THE UNDERTAKINGS

Projects within this Class can generally be described as new sanitary sewage systems, or expansions to, or upgradings of, existing sanitary sewage systems.

A new sanitary sewage system refers to a project which will include a sanitary sewage collection system, treatment plant, and outfall/discharge/disposal facility.

An expansion refers to the addition of new equipment, facilities or management practices to increase system capacity.

An upgrading consists of additions or replacements to existing equipment, facilities or practices which are intended to achieve a higher level or quality of system performance, while not increasing system capacity.

To solve an individual problem it may be necessary to develop a new sanitary sewage system or to expand and/or upgrade an existing sanitary sewage system.

Following is an overview of the typical components of a sewage system, to assist in identifying where undertakings within this Class would fit within the total system.

Sewage System Components

In this document sewage systems are comprised of three basic components:

- collection
- treatment
- management of sludge wastes

The collection component of a sewage system collects raw sewage from a source and delivers it to the treatment component via one or more of the following:

- gravity sewers
- vacuum lines
- pumping stations
- forcemains

The treatment component consists of one or more of the following facilities:

- an individual septic tank and tile field (servicing one sewage discharge point);
- a communal septic tank(s) and tile field(s) (servicing a number of sewage discharge points);
- a lagoon or 'waste stabilization pond';
- a Sewage Treatment Plant (STP).

Each of the above treatment facilities uses different processes and also produces wastewater and sludge.

The sludge management component consists of one or more of the following facilities or practices:

- disposal of sludge at a sanitary landfill site;
- disposal of sludge by burning it in an incinerator;
- utilization of sludge by applying it to soil conditioning sites (agriculture fields);

- utilization of sludge by composting;

- a sludge transfer station to store sludge on a temporary basis.

In this Class EA an expansion or upgrading project may include the construction of one or more of the following facilities:

- Sewers (gravity sewer, vacuum line, forcemain).

- Pumping stations.

- Communal septic tanks and/or tile fields.

- STP's.

- Lagoon systems.

- Facilities for the disposal or utilization of sludge.

Most projects in this Class will alter the physical characteristics of the sewage system by requiring, for example:

- construction of new facilities or additions to existing facilities such as settling or aeration tanks, incinerators and buildings;

- acquisition of additional land to house the facilities, either at existing sites or new locations;

- extension of existing sewer easement or utility corridor;

- acquisition of additional land to maintain the appropriate "buffer zone" between adjacent uses and the treatment facilities.

3.2.2 PURPOSE OF THE UNDERTAKING

The projects in this Class will be proposed to resolve problems affecting the operation and efficiency of existing systems, and/or to accommodate future growth of communities, or to alleviate specific pollution problems.

One or more of the following general objectives will be achieved:

A. reduce public health problems or nuisances;

B. improve the quality of effluent produced by the sewage system;

C. improve the management of sludge waste produced by the system;

D. expand the capacity of the sewage system to solve existing problems or to accommodate future growth;

E improve system efficiency;

F. prevent system failure.

The purpose or objective of a specific project in this Class will be determined by the present or forecasted problem(s) affecting the operation and efficiency of the system, and the present or forecasted demand for increased system capacity.

The purpose of a project will be documented in the ESR.

The following subsections describe the types of problems and demands:

A. Public Health

The well-being of human life may be affected, or nuisances may be caused, by such problems as:

- contamination of ground-water supply or surface water supply used for human consumption, live-stock watering, recreation or irrigation;
- failure to meet air quality requirements at sludge incinerators;
- failure of the system resulting in the backup of raw sewage through the sewers into basements;
- odour from the sewage treatment facilities, or from a sludge transfer station;
- noise from operation of a pumping station or sewage treatment plant;
- traffic hazards, nuisance or noise from trucking of sludge.

B. Effluent Quality

The objectives for water quality include criteria governing the physical and inorganic characteristics of water bodies (e.g., temperature, dissolved oxygen, chlorine, phosphorous), microbiological criteria and the allowable concentration of heavy metals and pesticides. The quality of the effluent produced by a sewage treatment plant must be adequate to ensure that the minimum standards set for the receiving water body can be achieved.

The rationale for an expansion or upgrading project may, therefore, be based on the current or forecasted quality of effluent produced, due to such problems as:

- inefficient operation of the treatment facility;
- outdated original design of the system;
- original design criteria are no longer acceptable;
- industrial waste discharged contains chemicals toxic to the biological treatment process used in the treatment facility;
- changes in policies and guidelines for sewage treatment processes and for the receiving water body;
- changes in the physical and chemical characteristics of the receiving water body due to upstream discharges;
- insufficient dilution of effluent by receiving water body.

C. Management of Sludge Waste

The need for the project may result from problems such as:

- the sanitary landfill site(s) at which sludge is currently being disposed of may be at or near capacity;
- the agricultural lands or "soil conditioning sites" at which sludge is utilized may be at or near capacity;

- the constituents of the sludge may make it unacceptable for disposal/utilization at existing available sites;

- Ministry policies or guidelines for sludge disposal/utilization may have changed.

D. System Capacity

The existing sewage system would not be capable of handling present or forecasted volumes of sewage due to such problems as:

- system is at or approaching its original design capacity and cannot accommodate increased volumes of sewage;

- outdated original design or construction of the system;

- deterioration in the condition of the collection system;

- infiltration of groundwater into the collection system;

- illegal connections into the collection system;

- changes in design philosophy.

E. System Efficiency

Various facets of system efficiency such as labour, maintenance costs or energy consumption may be improved by design improvements and/or the introduction of new technology.

F. Potential System Failure

Concern may be expressed as to potential system failure due to such factors as:

- deterioration of system components due to age;

- structural failure of system components;

- deterioration due to chemical attack;

- repeated equipment breakdown;

- outdated original design and/or construction of the system.

3.2.3 ALTERNATIVES TO THE UNDERTAKING

In many instances, there may be more than one way of solving problems or meeting new demands on existing sewage systems. Solutions other than an expansion or upgrading which may be considered are called "Alternatives to the Undertaking", some of which are listed below:

A. Modify operational practices at the treatment facility.

B. Expand maintenance program.

C. Improve individual septic systems.

D. Reduce sewage flows.

E. Reduce industrial discharge.

F. Improve community storm water management.

G. Alter current sludge management.

H. Limit community growth.

I. Discharge to an adjacent existing sewage system.

J. Construct a new sewage system.

K. Construct a new sewage treatment plant.

L. Construct a new lagoon treatment facility.

M. "Do Nothing".

Depending on the nature of the existing sewage system and of the problems being encountered or forecasted, there are variations in the ways these general alternatives to the undertaking could be carried out. The most common of these variations are described in the following subsections.

In reviewing these subsections there are a number of factors that should be kept in mind:

- A sewage system consists of a series of inter-related components. Therefore, many of the potential "Alternatives to the Undertaking" may resolve more than one of the general problems previously described.

- The feasibility of the "Alternatives to the Undertaking" will depend in part, on the nature and location of the sewage system, the nature and location of the problem(s), the comparative cost of the alternative solutions, the pressures for growth and the municipality's capacity to finance the extension of services.

- It is possible that the only feasible solution to the problem(s) may be an expansion and/or upgrading project in this Class. Conversely, there may also be one or more feasible "Alternatives to the Undertaking" which merit consideration.

- Where the final recommended solution is a project of the type described in this Class, the "Alternatives to the Undertaking" will be documented in the ESR.

The following alternative actions may solve one or more of the general problems previously described:

A. <u>Modify Operational Practices at the Treatment Facility</u>

- Limit operating hours of noise equipment to reduce sound levels.

- Reschedule the timing for, or haulage routes of trucks removing sludge from the treatment facility to minimize traffic and safety problems in residential areas.

- Alter quantities of sludge stored at the treatment facility and/or duration of sludge storage to minimize odour problems.

- Alter timing or duration of land treatment.

- Optimize operational efficiency.

- Undertake training programs to upgrade operator's understanding of treatment procedures and Ministry policies, guidelines and practices.

B. Expand Maintenance Program

- Clean the sewage system to improve treatment efficiency and hydraulic characteristics.

- Undertake maintenance activities such as equipment overhaul, replacement of parts, repair of damaged tanks.

C. Improve Individual Septic Systems

Repair, clean and enlarge existing septic tanks and/or tile fields.

D. Reduce Sewage Flows

- Enforce municipal by-laws with respect to permitted connections to the sewage collection system, e.g., sever illegal roof drains and weeping tiles.

- Maintain the collection system to minimize groundwater infiltration into the sewers.

- Initiate a community water conservation program in order to reduce overall sewage discharge volumes.

E. Reduce Industrial Discharge

- Adopt an Industrial Waste By-law in the municipality to set criteria for the quality of industrial sewage discharge.

- Amend existing Industrial Waste By-law in order to require pretreatment of sewage at industrial plants.

- Amend existing Industrial Waste By-law in order to require process changes in industrial plants.

- Appoint an Industrial Waste Inspector and ensure that violations of the by-law are sought out and the by-law is vigorously enforced.

F. Improve Community Stormwater Management

In situations where a combined storm and sanitary sewer and treatment facilities exist, the following alternatives may be considered:

- Provide or expand temporary or permanent runoff storage facilities to accommodate "wet weather" peak runoff flows, e.g., in ponds, swales, fields, parking lots, roof tops, parks.

- Install inlet controls, as part of normal maintenance activities, to prevent surcharge of combined sewers during "wet weather" peak runoff periods.

- Improve street maintenance program (i.e., cleaning, removal and disposal of debris) to minimize grit and solids entering combined sewers.

G. Alter Current Sludge Management Practices

- Utilize alternative chemicals or quantities of chemicals and/or chemical dosing methods to change characteristics of sludge thereby making it acceptable for disposal utilization.
- Maintain or improve sludge dewatering equipment to increase process efficiency and reduce sludge volume.
- Alter the application rate of sludge disposal at existing landfill site(s).
- Alter the application of sludge utilized on existing agricultural land.
- Alter the quantity of sludge stored on a contingency basis in existing facilities at the treatment plant or transfer stations, in order to resolve scheduling problems at disposal or utilization sites.
- Construct a new sludge incinerator to complement/substitute for existing disposal/utilization methods.
- Improve the operating efficiency of an existing sludge incinerator.

H. Limit Community Growth

- Limit the ultimate extent and/or location of proposed residential, industrial and commercial growth in the community.
- Phase or schedule proposed growth in the community with respect to both location and implementation timing.

I. Discharge to an Adjacent Sewage System

Discharge sewage from existing or proposed development into an existing sewage system located in an adjacent municipality.

J. Construct A New Sewage System

Construct a new sewage system to service existing or proposed development areas.

K. Construct A New Sewage Treatment Plant

Construct a new sewage treatment plant within an existing collection and treatment system to replace or supplement an existing sewage treatment plant or lagoon treatment facility.

L. Construct A New Lagoon Treatment Facility

Construct a new lagoon treatment facility to supplement or replace an existing communal and/or subsurface disposal system.

M. "Do Nothing"

In the "Do Nothing" alternative, no improvements or changes would be made to solve the identified problem(s). This means that the problems would remain in the system. It does not necessarily mean however, that no further development in the community would occur. Where an expan-

sion or upgrading project in this Class is one of the alternative solutions considered, and is the recommended solution, the "Do Nothing" alternative will also be investigated. The "Do Nothing" alternative will be documented in the ESR along with any other alternatives to the undertaking which were examined.

The "Do Nothing" alternative may be implemented at any time during the design process prior to the commencement of construction. A decision to "Do Nothing" would typically be made when the costs of all other alternatives, both financial and environmental, significantly outweigh the benefits.

3.3 STORM SEWAGE PROJECTS

3.3.1 DESCRIPTION OF THE UNDERTAKINGS

Projects within this Class can generally be described as new storm sewage systems or expansions to or upgradings of existing storm sewage systems.

A new storm sewage system refers to a project which may include a storm water collection system and facilities for storm water management/treatment.

An expansion refers to the addition of new sewers and facilities.

An upgrading consists of additions or replacements to existing sewers and facilities or implementation of practices which are intended to modify flow rate, volume and quality control.

Note:

- Works carried out under the Drainage Act are exempt from the EA Act and are not part of this undertaking.

- Storm sewer works in association with works carried out under the Public Transportation and Highway Improvement Act are not subject to the EA Act under this Class EA. For these projects, reference should be made to the Class EA for Municipal Road Projects.

Sewage System Components

Storm sewage systems consist of:

- road storm sewers
- trunk storm sewers
- storm water management facilities

The road storm sewer collects storm drainage from such sources as private drains, catch basins, ditch inlets and culverts, and conveys it to a trunk storm sewer, which in turn conveys it to receiving waters.

Receiving waters and watercourses include but are not restricted to: overland flow routes, ditches, channels, intermittent or continuous streams and creeks, and rivers and lakes.

Storm water management facilities include storage to achieve peak flow attenuation and/or water quality control. Storage may be provided by underground chambers, surface detention ponds, roofs, parking lots, and retention ponds.

Water quality control may consist of one or more of the following:

- Monitoring of storm water quality parameters such as BOD, COD, bacterial counts;

- Aeration;

- Replenishment;

- Treatment such as disinfection, clarification, PH control.

In this Class EA, an expansion or upgrading project may include the construction of one or more of the following:

- Extension of road storm sewers;

- Expansion of road or trunk storm sewers;

- Storm water channel improvements;

- Addition of control works such as weirs, dams, hydraulic brakes and other flow-limiting devices.

Most projects in this Class will alter the physical characteristics of the sewage systems by requiring, for example:

- Extension of existing sewer easements or utility corridors;

- Acquisition of additional land for detention facilities.

3.3.2 PURPOSE OF THE UNDERTAKING

The projects in this Class will be proposed to resolve problems affecting the operation and efficiency of existing systems and/or to accommodate future growth of communities, or to alleviate flooding or specific pollution problems.

One or more of the following general objectives will be achieved:

A. alleviate local or regional flooding problems;

B. reduce public health or safety problems or nuisances;

C. improve the quality of effluent produced by the sewage system;

D. expand the capacity of the sewage system;

E. improve system efficiency;

F. prevent system failure.

G. control erosion and sedimentation;

H. maintain baseflow or groundwater infiltration; and,

I. separate an existing combined sewer system by building a new storm sewer.

The purpose or objective of a specific project in this Class will be determined by the present or forecasted problem(s) affecting operation and efficiency of the system, and the present or forecasted demand for increased system capacity or improved water quality.

The specific purpose of a project will be documented in the ESR.

The following subsections describe the types of problems and demands:

A. Local or Regional Flooding

Flooding caused by system deficiencies and/or incidence of low frequency storms, may result in the following problems:

- serious property damage;

- economic business loss;

- damage or interruption of municipal services;

- degradation of agricultural or recreational lands.

B. Public Health and Safety

The well-being of human life may be affected, or nuisances may be caused, by such problems as:

- Contamination of groundwater supply or surface water supply used for human consumption, livestock watering, recreation or irrigation;

- Failure of the system resulting in the backup of sewage through the sewers into basements;

- Inadequate water quality control at detention facilities;

- Unsafe conditions resulting from high flows, velocities or depths in open channels, detention ponds or other facilities accessed by the public.

C. Effluent Quality

The objectives for water quality include criteria governing the physical, organic and inorganic characteristics of water bodies, (e.g., temperature, dissolved oxygen, salts, chlorine, phosporous), microbiological criteria, and the allowable concentrations of detritus heavy metals and pesticides. The quality of the effluent produced by storm sewage systems should attempt to ensure that minimum standards set for receiving water bodies can be achieved.

The rationale for an expansion or upgrading project may, therefore, be based on the current or forecasted quality of effluent produced due to such problems as:

- Inefficient operation of the detention facility;

- Outdated original design or construction of the system;

- Original design criteria are no longer acceptable;

- Changes in policies and guidelines for storm water management;

- Changes in the physical and chemical characteristics of the receiving water body due to upstream discharges;

- Insufficient dilution of storm drainage by the receiving water body.

D. System Capacity

The existing storm sewage system would not be capable of handling present or forecasted volumes of sewage due to such problems as:

- system is at or approaching its original design capacity and cannot accommodate increased volumes of sewage;

- outdated original design or construction of the system;

- deterioration in the condition of the collection system;

- infiltration of groundwater into the collection system;

- illegal connections into the collection system;

- changes in design philosophy;

- changes in catchment area.

E. System Efficiency

Various facets of system efficiency such as labour,

maintenance costs or energy consumption may be improved by design improvements and/or the introduction of new technology.

F. Potential System Failure

Concern may be expressed as to potential system failure due to such factors as:

- deterioration of system components due to age;
- structural failure of system components;
- erosion of streams and channels;
- outdated original design or construction of the system.

3.3.3 ALTERNATIVES TO THE UNDERTAKING

In many instances, there may be more than one way of solving problems or meeting new demands on existing sewage systems. One type of solution which may be considered is an expansion or upgrading project.

Solutions other than an expansion or upgrading which may be considered are called "Alternatives to the Undertaking", some of which are listed below:

A. expand sewer cleaning programme;

B. expand stream cleaning programme;

C. remove illegal drain connections;

D. require stormwater management;

E. limit Community growth;

F. establish a sewer use by-law;

G. "Do Nothing".

Depending on the nature of the existing sewage system, and on the problems being encountered or forecasted, there are variations in the ways these general alternatives to the undertaking could be carried out. The most common of these variations are described in the following subsections.

In reviewing these subsections there are a number of factors that should be kept in mind:

- A storm sewage system comprises a series of components.
- The feasibility of the "Alternatives to the Undertaking" will depend in part, on the nature and location of the sewage system, the nature and location of the problem(s), the comparative cost of the alternative solutions, the pressures for growth, and the municipality's capacity to finance extensions of services.
- It is possible that the only feasible solution to the problem(s) may be an expansion and/or upgrading project in this Class. Conversely, there may also be one or more feasible "Alternatives to the Undertaking" which merit consideration in addition to the expansion or upgrading project.
- Where the final recommended solution is of a type

described in this Class, the "Alternatives to the Undertakings" will be documented in the ESR.

The following alternative actions may solve one or more of the general problems previously described:

A. Expand Sewer Cleaning Programme

- Increase frequency of removal of debris and sediment from catchbasins, manholes, inlet structures.

- Undertake regular, scheduled dragging, flushing and cleaning of the storm sewer system.

B. Expand Street Cleaning Programme

- Carry out regular, scheduled cleaning of the street system to improve storm water quality.

- Undertake normal maintenance and repair activities on the storm sewage system.

C. Remove Illegal or Undesirable Drain Connections

- Separate roof leaders and weeping tiles from storm drain.

- Disconnect illegal sanitary sewer connections from storm drains.

- Plug or disconnect floor drains from storm sewer systems.

D. Require Storm water Management for New Development

- Provide or expand temporary or permanent runoff storage facilities to accommodate peak runoff flow rates, e.g., in ponds, swales, fields, parking lots, roof tops, parks.

- Utilize natural wetlands to improve quality of storm water discharges.

- Ensure that approvals for new developments require the incorporation of urban runoff control measures, e.g., on-site storm water retention, minimization of impervious areas, appropriate lot grading, discharge of roof drains onto grassed areas to maximize absorption through ground.

- Ensure that approvals for major phased development be based on a comprehensive master drainage plan and a comprehensive pollution control strategy for the community, with appropriate policies to be included in the municipal Official Plan.

E. Limit Community Growth

- Limit the ultimate extent and/or location of proposed residential, industrial and commercial growth in the community.

- Phase or schedule proposed growth in the community with respect to both location and implementation timing.

F. Establish a Sewer Use By-Law

- Adopt a storm sewage by-law in the municipality to set criteria for storm water quality and storm sewer use.

- Amend existing storm sewage by-law to reflect current or improved criteria.

- Ensure that violations of the by-law are sought out and the by-law is vigorously enforced.

G. "Do Nothing"

In the "Do Nothing" alternative, no improvements or changes would be made to solve the identified problem(s). This means that the problems would remain in the system. It does not necessarily mean however, that no further development in the community would occur.

Where an expansion or upgrading project in this Class is one of the alternative solutions considered, and is the recommended solution, the "Do Nothing" alternative will also be investigated. The "Do Nothing" alternative will be documented in the ESR along with any other alternatives to the undertaking which were examined.

The "Do Nothing" alternative may be implemented at any time during the Design Process prior to the commencement of construction. A decision to "Do Nothing" would typically be made when the costs of all other alternatives, both financial and environmental, significantly outweigh the benefits.

4.0 ENVIRONMENT

4.1 DESCRIPTION OF THE ENVIRONMENT

INTRODUCTION

The nature of a Class EA is such that it applies to numerous projects that could be carried out in any part of Ontario. A description of every component of the environment that might be encountered is therefore impractical. In order to help the reader in understanding how the environment could be affected, a series of Environmental Settings are described. These are set out below under the basic headings of Urban and Rural.

Although these descriptions are general, the proponent is required to describe the environment to be affected by a specific project in detail, in the ESR. Review agencies and the public will therefore have an opportunity to understand the specific environment affected by a given project while it is being planned.

URBAN ENVIRONMENTAL SETTINGS

Urban areas vary not only in function but also in physical layout. For example, the approaches to an urban area may be characterized by strip development, or by the presence of industry. More than one environmental setting may appear in an urban area. Typical examples of environmental settings occurring in the urban Ontario landscape are as follows:

1. Stable Residential Areas

- primary land use is residential
- Official Plan (if existing) designates the area as residential area, and the area is zoned for existing residential use
- free from redevelopment pressures
- adjacent areas relatively free from development pressures

2. Pressured Residential Areas

- primary land use at present is residential
- relatively high percentage of tenant-occupied residences
- adjacent areas are, or are becoming, non-residential
- there may be pressures to revise the official plan, if one exists, to allow redevelopment to higher densities, commercial use or both
- properties are zoned for more intensive residential use and/or non-residential use

3. Recreational Areas

- land use is a mixture of (natural) open space, recreational uses such as swimming pools, playing fields, arenas, etc., and possibly scattered residential buildings
- in some cases a lake/ stream/marina/beach/ cottaging area may be adjacent to the facility, or nearby, and tourism may therefore be significant in or around the area
- scattered pockets of commercial and/or industrial land uses may exist.
- recreational parks.

4. Institutional Area

- primary land use is institutional

5. Commercial Areas

- primary land use is commercial
- zoning is commercial and commercial development exists or is imminent

6. Industrial Areas

- primary land use is industrial
- zoning is industrial and industrial development exists or is imminent

RURAL ENVIRONMENTAL SETTINGS

Typical examples of environmental settings occurring in the rural Ontario landscape are as follows:

1. Stable Agricultural Areas

- agriculture is the predominant land use; usually prime or high class farmland
- Official Plan designates the area as agricultural area, and the area is zoned for existing agricultural use
- adjacent area is relatively free from significant development pressures; no large urban areas in the immediate vicinity
- rural community, relatively stable social conditions
- very scattered commercial or residential land use along the highway; some rural concentrations (e.g., hamlets)
- field entrances, active farming is commonplace along the existing right-of-way.

2. Pressured Agricultural Areas

- agriculture is the main land use at present; usually there is a predominance of high class farmland
- farmland is under considerable pressure for non-agricultural development, e.g., dormitory residential development for nearby urban area; outward expansion pressure from adjacent urban area
- commercial and residential land uses occur regularly along the existing highway

- properties are zoned for non-agricultural uses
- much of the agricultural land, especially adjacent to the existing highway, is under "speculative" control.

3. Recreational Areas

- land use is a mixture of natural open space, recreational uses, and scattered farming
- farmland is usually not prime quality and much pasture and meadow exists.
- intensive recreation uses, such as cottage development and tourism are significant in or around the area
- scattered commercial, industrial, and pockets of residential land use exist along the highway
- some Crown land and much forested "natural" open space.

4. Undeveloped Areas

- "undeveloped" landscape, in a relative sense; a predominance of trees, surface water, scrubland, etc.
- much of the land is Crown land
- socio-economic structure relatively stable; very dependent on natural resources, and resource-based extensive recreational uses (canoeing, hunting, fishing, scattered cottage use, etc.)
- scattered commercial and residential land uses along the highway, often occurring in small clusters
- wood operations and mining activities may occur.

5. Commercial, Institutional and Industrial Areas

- primary land use is commercial, institutional or industrial
- the appropriate zoning exists and the appropriate development exists or is imminent.

4.2 DESCRIPTION OF THE EFFECTS ON THE ENVIRONMENT

INTRODUCTION

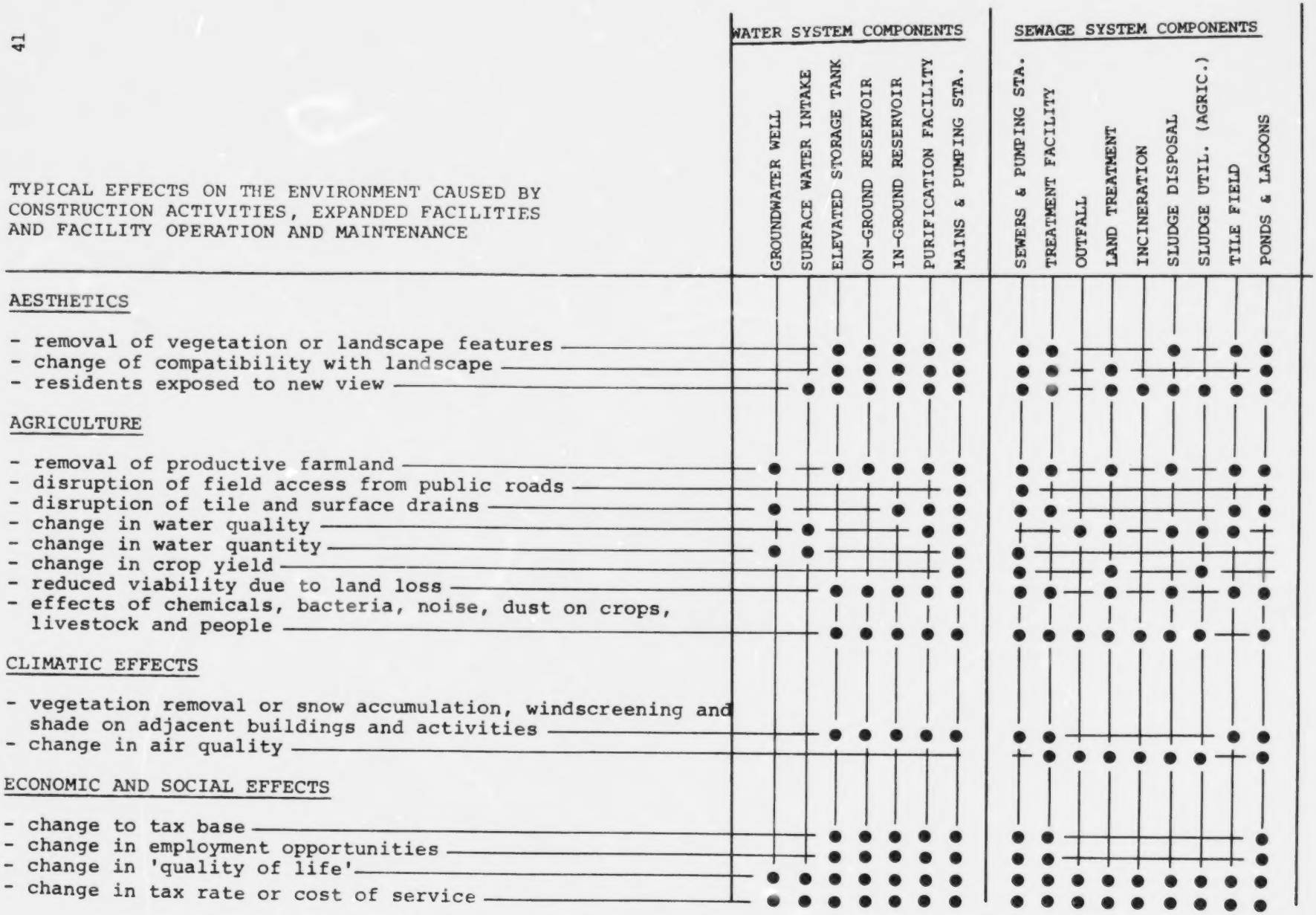
The purpose of this section is to outline the kinds of effects that are associated with the projects carried out under this document. As discussed in the previous section, there are a myriad of conditions which can be encountered in site specific terms. This necessitates a general discussion of effects, although the effects of each specific project will be documented in the ESR.

In the following tables, the indication of an effect does not necessarily show a negative effect; in some cases, the effect will be positive.

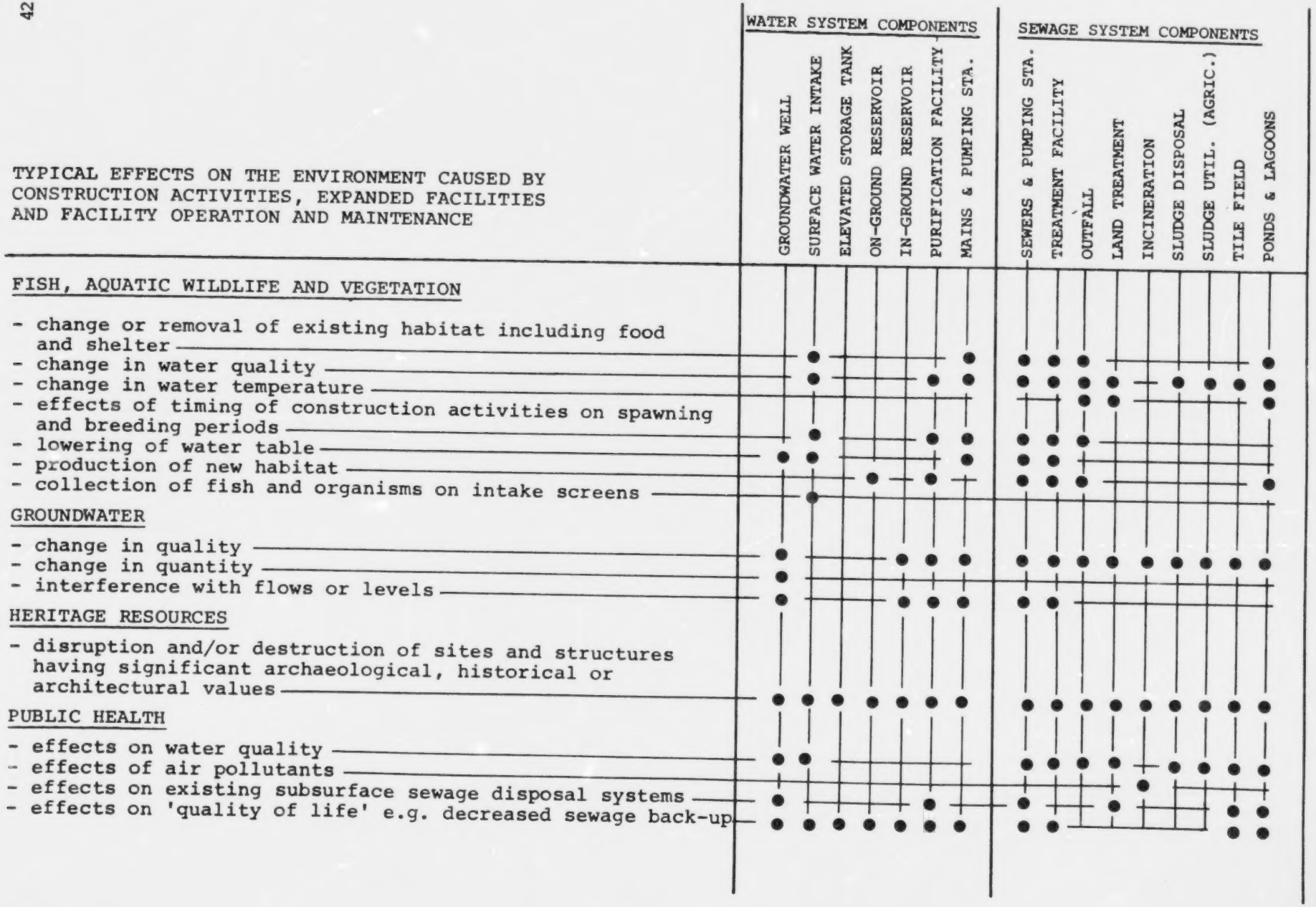
The tables are presented in matrix form to relate the various projects undertaken by municipalities to various site specific environmental conditions that can be encountered.

In the tables, the presence of (●) indicates that a positive or negative effect is likely. If the cell is empty, then an effect is unlikely.

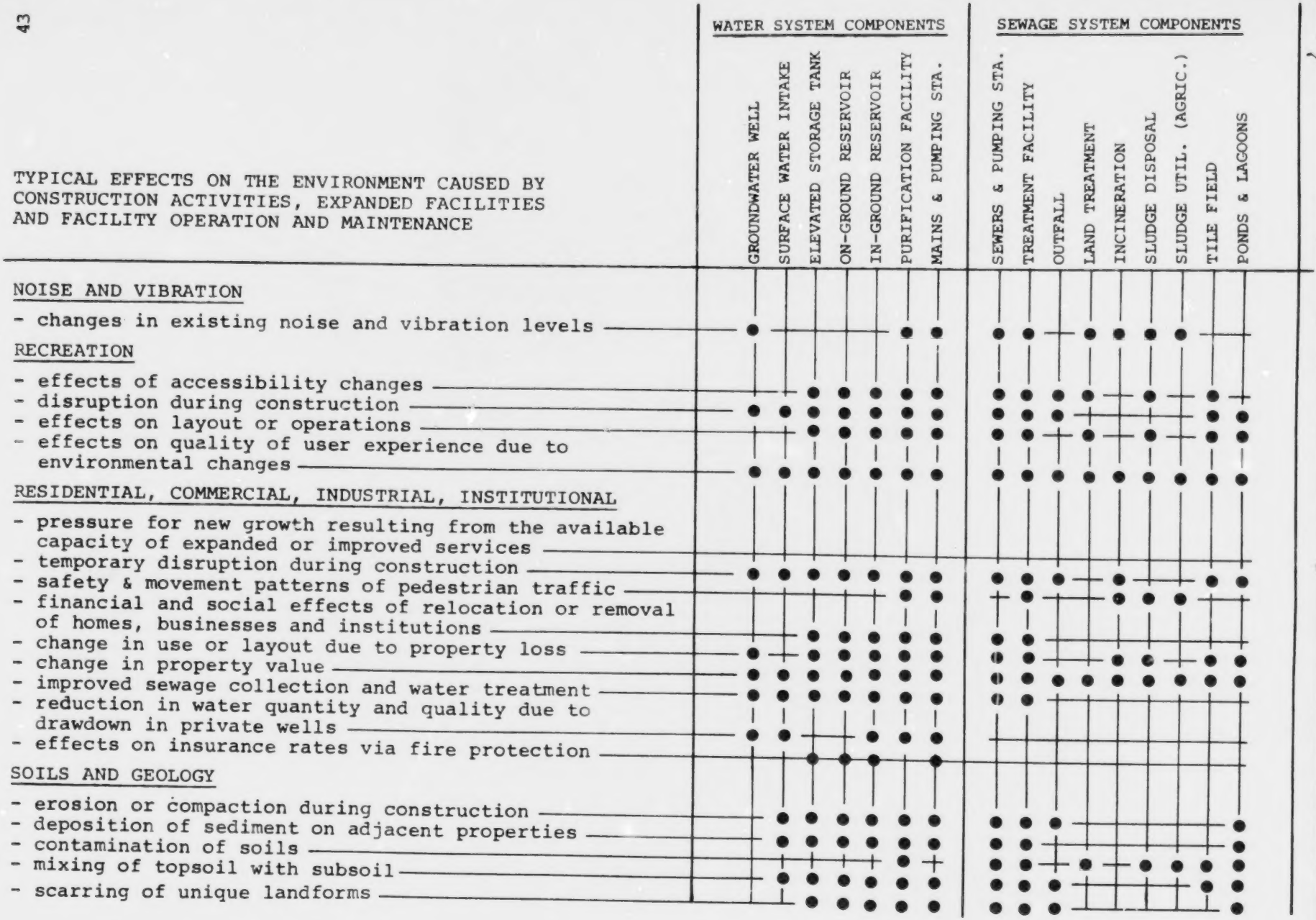
TYPICAL EFFECTS ON THE ENVIRONMENT CAUSED BY CONSTRUCTION ACTIVITIES, EXPANDED FACILITIES AND FACILITY OPERATION AND MAINTENANCE


WATER SYSTEM COMPONENTS
GROUNDWATER WELL
SURFACE WATER INTAKE
ELEVATED STORAGE TANK
ON-GROUND RESERVOIR
IN-GROUND RESERVOIR
PURIFICATION FACILITY
MAINS & PUMPING STA.
SEWAGE SYSTEM COMPONENTS
SEWERS & PUMPING STA.
TREATMENT FACILITY
OUTFALL
LAND TREATMENT
INCINERATION
SLUDGE DISPOSAL
SLUDGE UTIL. (AGRIC.)
TILE FIELD
PONDS & LAGOONS
AESTHETICS
- removal of vegetation or landscape features
- change of compatibility with landscape
- residents exposed to new view
AGRICULTURE
- removal of productive farmland
- disruption of field access from public roads
- disruption of tile and surface drains
- change in water quality
- change in water quantity
- change in crop yield
- reduced viability due to land loss
- effects of chemicals, bacteria, noise, dust on crops, livestock and people
CLIMATIC EFFECTS
- vegetation removal or snow accumulation, windscreening and shade on adjacent buildings and activities
- change in air quality
ECONOMIC AND SOCIAL EFFECTS
- change to tax base
- change in employment opportunities
- change in 'quality of life'
- change in tax rate or cost of service

TYPICAL EFFECTS ON THE ENVIRONMENT CAUSED BY CONSTRUCTION ACTIVITIES, EXPANDED FACILITIES AND FACILITY OPERATION AND MAINTENANCE


WATER SYSTEM COMPONENTS
SEWAGE SYSTEM COMPONENTS
GROUNDWATER WELL
SURFACE WATER INTAKE
ELEVATED STORAGE TANK
ON-GROUND RESERVOIR
IN-GROUND RESERVOIR
PURIFICATION FACILITY
MAINS & PUMPING STA.
SEWERS & PUMPING STA.
TREATMENT FACILITY
OUTFALL
LAND TREATMENT
INCINERATION
SLUDGE DISPOSAL
SLUDGE UTIL. (AGRIC.)
TILE FIELD
PONDS & LAGOONS
FISH, AQUATIC WILDLIFE AND VEGETATION
- change or removal of existing habitat including food and shelter
- change in water quality
- change in water temperature
- effects of timing of construction activities on spawning and breeding periods
- lowering of water table
- production of new habitat
- collection of fish and organisms on intake screens
GROUNDWATER
- change in quality
- change in quantity
- interference with flows or levels
HERITAGE RESOURCES
- disruption and/or destruction of sites and structures having significant archaeological, historical or architectural values
PUBLIC HEALTH
- effects on water quality
- effects of air pollutants
- effects on existing subsurface sewage disposal systems
- effects on 'quality of life' e.g. decreased sewage back-up

TYPICAL EFFECTS ON THE ENVIRONMENT CAUSED BY CONSTRUCTION ACTIVITIES, EXPANDED FACILITIES AND FACILITY OPERATION AND MAINTENANCE


WATER SYSTEM COMPONENTS
SEWAGE SYSTEM COMPONENTS
GROUNDWATER WELL
SURFACE WATER INTAKE
ELEVATED STORAGE TANK
ON-GROUND RESERVOIR
IN-GROUND RESERVOIR
PURIFICATION FACILITY
MAINS & PUMPING STA.
SEWERS & PUMPING STA.
TREATMENT FACILITY
OUTFALL
LAND TREATMENT
INCINERATION
SLUDGE DISPOSAL
SLUDGE UTIL. (AGRIC.)
TILE FIELD
PONDS & LAGOONS
NOISE AND VIBRATION
- changes in existing noise and vibration levels
RECREATION
- effects of accessibility changes
- disruption during construction
- effects on layout or operations
- effects on quality of user experience due to environmental changes
RESIDENTIAL, COMMERCIAL, INDUSTRIAL, INSTITUTIONAL
- pressure for new growth resulting from the available capacity of expanded or improved services
- temporary disruption during construction
- safety & movement patterns of pedestrian traffic
- financial and social effects of relocation or removal of homes, businesses and institutions
- change in use or layout due to property loss
- change in property value
- improved sewage collection and water treatment
- reduction in water quantity and quality due to drawdown in private wells
- effects on insurance rates via fire protection
SOILS AND GEOLOGY
- erosion or compaction during construction
- deposition of sediment on adjacent properties
- contamination of soils
- mixing of topsoil with subsoil
- scarring of unique landforms

TYPICAL EFFECTS ON THE ENVIRONMENT CAUSED BY CONSTRUCTION ACTIVITIES, EXPANDED FACILITIES AND FACILITY OPERATION AND MAINTENANCE	WATER SYSTEM COMPONENTS							SEWAGE SYSTEM COMPONENTS								
	GROUNDWATER WELL	SURFACE WATER INTAKE	ELEVATED STORAGE TANK	ON-GROUND RESERVOIR	IN-GROUND RESERVOIR	PURIFICATION FACILITY	MAINS & PUMPING STA.	SEWERS & PUMPING STA.	TREATMENT FACILITY	OUTFALL	LAND TREATMENT	INCINERATION	SLUDGE DISPOSAL	SLUDGE UTIL. (AGRIC.)	TILE FIELD	PONDS & LAGOONS
SURFACE DRAINAGE																
· diversion and/or channelization of watercourses		●					●	●		●						●
· effects on floodplain		●					●	●	●	●						●
· contamination of surface watercourse		●			●	●	●	●	●	●	●	●	●	●	●	●
· sedimentation and turbidity of adjacent water bodies due to construction activities		●	●	●	●	●	●	●	●	●					●	●
· "ponding" effects on adjacent properties due to natural drainage disruption				●	●	●	●	●	●		●		●		●	●
· increased surface runoff				●	●		●	●					●		●	●
· decreased surface water quality	●	●														
· decreased surface drainage				●	●						●			●	●	●
TERRESTRIAL VEGETATION AND WILDLIFE																
· mortality/stress of vegetation due to sediment deposition, construction equipment movement or changes in soil moisture																
· conditions resulting in reduction and/or deterioration of wildlife habitat	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
· changes in vegetative composition as a result of environmental changes	●			●	●	●	●	●	●		●	●	●		●	●
· removal or disturbance of significant trees and/or ground flora	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
· new or increased exposure of trees leading to increased loss of habitat for wildlife	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
· effect on wildlife habitat	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
· effect of contaminants on vegetation and wildlife																
UTILITIES																
· effects on other utilities, e.g., relocations			●	●	●	●	●				●	●			●	●

4.3 MITIGATING MEASURES

DESIGN

Through the planning and design process described in this Class EA, it may be determined that certain projects have adverse effects on the environment. The Class EA process is intended to identify impacts and where possible, to avoid them. However, in some cases, this may not be possible. In such situations, measures will have to be taken to either minimize or offset such effects. Actions taken to reduce the effects of a certain project on the environment are called "Mitigating Measures".

During design, the environment affected by a project will be established and the specific net effects identified. Measures which must be taken to minimize the negative effects will be worked out such that the design can be tailored to recognize them. Contract drawings and documents may then include special provisions to ensure the least impact on the environment. Appendix 2 sets out a table showing typical mitigating measures for potential adverse effects on the environment.

Construction

This Class EA describes the process by which the various alternatives open to the planner and designer are analyzed, and the most suitable design is chosen. The construction stage presents another set of alternatives as to how the work will be undertaken.

The majority of projects which are subject to Class EAs will be carried out by contracts let by competitive tender, and the contractor is normally the low bidder. It is presumed that he will have costed the work and decided on his method of operation during the bidding stage, subject to the specifications and special provisions in the contract and any relevant legislation.

Contractors differ in sequence of operation, techniques, methods of operation, type, make and size of equipment utilized, and speed of operation. There is, however, a fairly general uniformity in construction operation, being the natural result of economic competition.

Some of these operations have potential for environmental impact, and where these can be anticipated in the design stage, 'special provisions' shall be written into the construction package. They shall spell out what can or cannot be done during specific operations. Where a problem cannot be identified prior to construction, it shall be addressed on the site, and where significant, an addendum to the ESR shall be written.

Staff responsible for inspecting the contractor's work must be made aware of such provisions, in order to ensure compliance during construction. It shall be the responsibility of these inspectors to ensure compliance with the environmental provisions, as well as the traditional engineering provisions of the construction package.

5.0 OPPORTUNITIES FOR PUBLIC INVOLVEMENT

The purpose of public participation is to allow for an exchange of ideas between the proponent and the public. Such an exchange will help to avoid controversy while broadening the information base in order to better facilitate good decision-making.

With this in mind, members of the general public shall be given the opportunity to provide input to Class EA projects. Information about the project and about the formal arrangements for citizen participation, when applicable, shall be made available in the local media, through press releases and/or advertising, and at the local municipal offices.

Where practicable, local residents directly affected by the project shall be individually contacted by letter or information package. This includes property owners who are immediately adjacent to the project and/or communities in the study area which may be affected by the proposals. Material collected during the study shall be available to the public at points of public contact (as described below), or through communication means such as telephone or letter exchanges.

The timing of public involvement is indicated on the flow chart establishing the Planning and Design Process for Municipal Sewage and Water Projects. This is shown graphically as the fourth box in Phases 2 and 3. If by Phase 3 there have been no significant changes made to the project, only those individuals or groups expressing interest during the Alternative Solution stage (Phase 2), and those directly affected by the undertaking, shall be circulated subsequent information at the Preferred Solution Stage (Phase 3).

This does not mean that people coming forth at a later stage will not be heard.

Information Centres

There are a number of techniques available for involving the public in the undertaking, such as formal public meetings and mail-out information packages. It is expected, however, that an information centre, when applicable, will be the usual method of communicating with the public. This will normally be an informal arrangement which allows effective one-to-one communication. Other techniques of involving the public may be employed from time to time as circumstances warrant.

The first instance when an information centre may be held is during the "Identify Alternative Solutions to Problem" stage (Phase 2). This would likely be used to inform local residents of the need for the project, the planning and design concepts formulated to date, the design under consideration, and to provide a forum to discuss potential impacts and local sensitivities. Options identified by the public, external agencies, and the proponent are considered at this time.

The second instance when an information centre may be held is near the end of the "Identify Alternative Design Concepts for Preferred Solution" stage (Phase 3). Information centres held at this time will allow public discussion and evaluation of design alternatives before a final selection is made. On some projects, an information centre will be held to allow public reaction to be monitored.

The frequency and precise timing of these public contacts will vary with the complexity of specific projects. Complexity will be determined by such criteria as:

(a) the extent of property required for the project;
(b) the number of property owners affected by the project;
(c) the number of indirect effects such as access changes or road closings;
(d) the nature of controversial or sensitive public issues;
(e) the magnitude of costs which might be passed on to the benefitting properties.

There should be sufficient flexibility to allow for additional public involvement, if necessary, on a project originally expected to generate little public response.

PUBLIC NOTIFICATION IS MANDATORY AT THREE POINTS IN THE PLANNING AND DESIGN PROCESS.

The first is during the consideration of Alternative Solutions to the Identified Problem (Phase 2).

The second is during the consideration of design concepts (Phase 3). As mentioned above this need only involve those expressing interest at the first contact point and those directly affected by the undertaking.

The third is upon filing of the ESR in the public record (Phase 4). At the point of Notification (see Glossary) of submission of the ESR, a period of 30 calendar days, (or longer, as specified by the proponent), following notification will be allowed for the public to view the ESR and provide comments to the proponent.

In those instances where a significant change to the project is made as a result of the comments received, an addendum to the ESR shall be considered.

Where a revision to an ESR is made, the potentially affected review agencies and public shall be contacted immediately and provided with at least five working days after notification of the change, in which to respond.

In the event a project is being proposed in response to an emergency, the proponent may elect to shorten the 30 and 5 day review periods referenced above. This may only be done if consent is first obtained from all potentially affected persons.

At the first point of public contact the proponent will outline the problem, indicate

the planning done to date, indicate the planning schedule, and advise that the study is being done in accordance with an approved Class EA. The public shall be advised of their rights with respect to participating in the planning process and requesting a "bump-up". They shall also be told who to contact and where to find the Class EA.

As set out in Schedules A, B, and C of Appendix 1, any undertaking may be elevated and assessed at a higher status at the proponent's discretion.

Section 5.1 outlines the roles of the public and others in changing the group designation of the project from a class project to an individual asessment (i.e., a bump-up).

5.1 PROVISION FOR CHANGING PROJECT STATUS -(BUMP-UP)

It is recognized that in most cases the projects included under this Class EA will have relatively minor environmental effects due to their small scale.

The degree of environmental impact, however, is not always directly related to project size or cost. This being the case, it is necessary to allow for special treatment of those projects that carry significant net negative environmental effects.

The mechanism for doing this is a procedure for elevating a project from the Class EA to an Individual EA status. The result is that an environmental assessment for that specific project must be submitted for formal review and approval under the Act. This act of elevating a project to an Individual EA status is called a "Bump-up", and may result in a formal public hearing.

The procedure is:

1. a person with a concern brings it to the attention of the proponent;

2. if the concern cannot be resolved through discussions with the proponent, the person may request that the proponent initiate a "bump-up";

3. if the proponent refuses, and the person with the concern wishes to pursue the "bump-up", he shall by submission in writing, with a copy to the proponent, request the Minister to direct the proponent to do an Individual EA for that project;

4. the Minister shall consider both sides of the argument and make a decision;

5. if the Minister agrees to "bump-up" the project, then he shall give notice with reasons to the proponent and the person requesting the "bump-up", that the Class EA approval does not apply to the specific project under discussion. The proponent shall then be required to prepare and submit an Individual EA for that project; or resolve the issue with the person requesting the "bump-up"; or defer the project;

6. if the Minister does not agree to "bump-up" the project, he shall give notice with reasons to the person requesting the "bump-up" and to the proponent.

The proponent is free to continue to plan a project and carry out site preparation work up until notice is received that the project has been bumped-up. Other than site preparation work, the implementation of a project shall not proceed until: the Minister has notified the proponent that the request for a bump-up has been denied, or after 45 days have expired from notification of the request for a bump-up, in the absence of a decision of the Minister to approve the request.

The "bump-up" procedure may be initiated at any time during the planning process, up to 30 calendar days after the filing of the ESR in the public record, or five working days after receipt of notice of an ESR addendum.

It is expected, however, that anyone having a concern would bring it to the proponent's attention early in the planning process, when the proponent has maximum flexibility to deal with the concern.

An obvious delay in bringing forward a concern, and subequent request for a "bump-up", is not as likely to be as effective as a concern identified early in the planning process.

6.0 DOCUMENTATION

6.1 ENVIRONMENTAL STUDY REPORT - (ESR)

Introduction

An Environmental Study Report shall be prepared for each project which proceeds through the Class EA process described in this document. The ESR shall be prepared when design work has progressed to the point where the details of any environmental protective measures to be incorporated in the construction package have been finalized. The ESR will be submitted to the Clerk or to the Secretary of the P.U.C., if applicable, who shall ensure that the document is available for inspection by the public, government, and private agencies. Copies of the ESR shall be made available to review agencies upon written request. In the case of bump-up, the ESR shall be submitted to the nearest MOE District Office immediately upon the proponent becoming aware of the bump-up request.

It is anticipated that the preparation of an ESR will not be an onerous task. For smaller projects, the ESR might simply consist of the project file which is developed for project management purposes.

A notice indicating completion of the ESR and its filing with the Clerk or with the Secretary shall be issued to all parties, (public and government agencies), which have been previously contacted and have indicated a desire to stay involved in the planning of the project. The notice shall indicate that the project may proceed to construction after 30 calendar days after notification of the ESR submission, unless a decision is made to do otherwise, or the project is bumped-up as a result of objections to the objections to the ESR that were received within the 30 day period.

Format and Content

In general, the format and content of the ESR will follow the outline below:

CHAPTER 1

INTRODUCTION AND BACKGROUND

The purpose of this chapter is to outline briefly:

- the ESR;
- the history and related studies;
- the purpose of the project;
- a general description of the project;
- the statement of the rationale for the project.

1.1 The Environmental Study Report

This section will describe in general what an ESR represents. For example:

> The ESR represents the documentation of the environmental assessment process for certain sewage and water projects for which a Class EA has been accepted and approved under the Act. The ESR documents the planning and design phase of a process which terminates with the construction of the project. It includes a discussion of the purpose of the project, the project approach, the existing natural and social environmental conditions in the project

area, the planning alternatives and alternative design options considered, and the construction requirements associated with the implementation of the project. For Schedule C Projects, the ESR also addresses the maintenance, operation and retirement aspects of a project, the environmental effects expected from these, and the mitigation measures proposed.

1.2 Purpose of the Project

A description of the purpose of the project shall be included in this section. For example:

- a description of the identified problem
- an outline of the objective of the project.

1.3 Background

The significant aspects of the project's background not covered in Section 1.2, shall be outlined in this section. For example:

- project history
- related studies
- previous related environmental reports submitted to the Clerk or to the Secretary of the P.U.C.

1.4 General Description of the Project

A general description of the project shall be outlined in this section and may include:

- the project location
- significant features of the project
- construction requirements
- environmental condition changes and mitigating measures
- the estimated costs and the methods of funding the works, including possible grants and subsidies.

1.5 Statement of the Rationale for the Project

This section shall outline the rationale for the project, i.e.:

- a summary of the major findings and conclusions of the study
- a description of the planning alternatives and alternative design options considered during the course of the project
- the rationale employed in selecting the preferred solution and preferred design concept.

CHAPTER 2

PROJECT APPROACH

The purpose of this chapter is to provide the reader with an understanding of the problem-solving and decision-making process utilized by the proponent, in order to resolve the identified problem(s) and any environmental concerns associated with the project.

A brief description is provided, therefore, of the manner in which the decision making process was conducted.

2.1 The Environmental Assessment

This section will briefly describe how the environmental assessment of the project was carried out. It will include a short discussion of:

- the data collection
- the data analysis and the evaluation of condition changes.

The above shall deal with the topic in general, and any detail shall be documented in the appropriate subsequent sections, e.g., Existing Conditions, Alternatives and Evaluation.

2.2 Project Stages and Organization

- time frame - planning, design, construction;
- project organization - project team, external team, etc.

2.3 Internal Involvement

- Other departments within the municipality which were involved in the project shall be identified, and the type and extent of their involvement shall be documented.

2.4 External Involvement

- Provincial ministries and agencies;
- Other municipalities.

The names of each of the above that were involved in the project shall be identified, and the type and extent of their involvement shall be documented.

2.5 Public Involvement

The type of public involvement, the extent, the number of meetings, those who were invited, and how notification of meetings was made, etc., shall be documented.

The manner in which the concerns identified by the public were addressed shall be documented.

CHAPTER 3

EXISTING CONDITIONS (Project Area)

The purpose of this chapter is to describe the existing natural and social environment, and the sewage and water servicing conditions of the project area.

3.1 Natural Environment

This section shall briefly describe the natural environmental setting of the project area, including any sensitive areas, and the flora and fauna.

The assimilative capacity shall be determined where a system involves a direct discharge to a water body.

3.2 Socio-economic Environment

This section shall briefly describe the socio-economic environmental setting of the project area. This will include a statement or description of the adjacent land uses, cultural activities, heritage resources, and the past activities and future proposals in the project area, including official plan policies and relevant designations for future land uses. The economics of a project will be given proper consideration.

3.3 Servicing Conditions

This section shall briefly describe the sewage and water servicing conditions in the project area. These conditions may include:

- system capacity needs - present and projected
- level of service, e.g., fire protection
- operational problems
- drainage problems

CHAPTER 4

ALTERNATIVES AND EVALUATION

The purpose of this chapter is to outline:

- the planning and design alternatives, and construction requirements, that were considered to resolve the identified problem(s);
- the natural and social environmental concerns associated with the planning alternatives, design alternatives and construction requirements that were considered to resolve the identified problem(s).
- the decision-making process by which the planning alternatives, design options and construction requirements were evaluated, and accepted or rejected.

4.1 Planning Alternatives

The planning alternative solutions that were considered shall be outlined in this section. The following information shall be documented:

- the advantages and disadvantages of the planning alternatives;
- the effects of the planning alternatives on the natural and social environment;
- the decision-making process used to select the most appropriate planning alternative.

4.2 Alternative Design Concepts

The selected design alternatives that were considered shall be outlined in this section. The following information shall be documented:

- the advantages and disadvantages of the alternative design options;
- the effects on the natural and social environment of the design alternatives;
- the decision-making process used to select the most appropriate design.

4.3 Construction and Operation Requirements

This section shall outline the construction and operation requirements of the selected design. For example:

- timing constraints;
- restrictions on the disposal of construction debris;
- sewage by-pass procedures.

CHAPTER 5

SELECTED DESIGN AND CONSTRUCTION REQUIREMENTS

The purpose of this chapter is to describe the project, and related engineering and environmental concerns.

5.1 The Selected Design

The specific engineering and natural and social environmental features of the selected design shall be described in this section. Timing constraints, erosion control measures, etc., shall be included in the description.

5.2 Selected Design - Potential Environmental Impacts

The potential direct and indirect environmental impacts associated with the selected design shall be described in this section. This description shall include both beneficial and adverse environmental impacts.

5.3 Selected Design - Mitigating Measures

The mitigating measures incorporated into the design to minimize the potential adverse environmental impacts shall be described in this section, and may consider such things as: treatability studies, selection of treatment processes, discussion of waterborne diseases, pathogens criteria, system reliability, cost value engineering and equipment selection. Design oriented mitigating measures such as noise abatement measures, landscaping schemes, and permanent erosion control measures, etc., shall be included in this description.

5.4 Selected Design - Specific Construction and Operation Requirements

The specific construction and operation requirements associated with the selected design shall be described in this section. For example:

- the movement of large volumes of erodible soil;
- drilling and blasting;
- construction activity adjacent to bodies of water;
- the effluent release from lagoon facilities;
- pumping station overflow procedures.

5.5 Specific Construction and Operation Requirements - Potential Environmental Impacts

The potential direct and indirect environmental impacts associated with the specific construction and operation requirements shall be described in this section. This description shall include both beneficial and adverse environmental impacts. For example:

- soil loss due to erosion;
- an increase in noise and vibration levels;
- alterations to water quality.

5.6 Specific Construction and Operation Requirements - Mitigating Measures

The mitigating measures incorporated into the construction package to minimize the potential adverse environmental impacts shall be described in this section. For example;

- the use of temporary mulches;
- a limitation on the hours of work;
- the use of cofferdams and sediment traps;
- timing for effluent releases;
- overflow containment.

5.7 Summary of Identified Concerns and Mitigating Measures

This section will provide a summary of the following:

- the engineering and environmental concerns identified during various stages of the project development;
- the mitigating measures incorporated into the design, or construction package.

5.8 Monitoring

This Section shall set out a proposed monitoring program, including a detailed description of the following:

- the key impacts to be monitored;
- whether monitoring is required during construction and/or operation of the facility;
- the period during which monitoring is necessary;
- the frequency and timing of surveys, the location of monitoring sites, and the methods of data collection analysis and evaluation;
- the content, manner and form in which records of monitoring data are to be prepared and retained;
- where, and for how long, monitoring records and documentation shall be on file and available for public scrutiny.
- in all cases, the ESR shall define the objectives of the monitoring programme, and shall document specific requirements for monitoring, appropriate to the particular circumstances and conditions in which the project will be constructed.

APPENDICES

Appendices shall be included to provide technical support to specific aspects of the environmental assessment documented in the report.

The appendices may include:

- Press Releases
- Citizens' submissions and opinions
- natural environment - studies
- social environment - studies
- design options evaluation
- specific construction requirements evaluation
- level of service

6.2 REVISIONS AND ADDENDA TO ESR

Due to unforeseen circumstances, it may not be feasible to implement the project in the manner outlined in the ESR. Any significant proposed modification shall be determined in consultation with potentially affected review agencies and the public. Where significant changes result, an addendum to the ESR shall be written. This addendum shall describe the circumstances necessitating the change, the environmental implications of the change, and what, if anything, can and will be done to mitigate any negative impacts. The addendum shall be filed with the ESR and notice of filing shall be given immediately to all affected parties.

Five working days following notification of the submission of an addendum shall be allowed for review of the change, and response by affected parties. In certain circumstances this review period may be extended by mutual agreement of the proponent and potentially affected parties.

The bump-up provisions may be invoked at this stage.

Implementation of those portions of the project which are the subject of an addendum, or have the potential to be directly affected by the proposed change, shall cease, and shall not be re-activated until the termination of the review period.

Provision for Review of Project

A time lapse may occur between the completion of the design process and the implementation of the project. In such cases, a review of the design process shall be carried out to ensure that the proposed project and any environmental mitigation is still valid. If significant modification of the proposed project or any additional environmental mitigation measures are appropriate, an addendum to the ESR shall be prepared and notice given.

7.0 CLASS EA AMENDING PROCEDURE

The purpose of an amending procedure is to allow for modifications to the Class EA approval after experience with its application has been gained. The reasons for such modifications may include:

1. Clarification of ambiguous areas of the document and procedure;

2. Streamlining the planning process in areas where problems may have arisen; or

3. Extension of the Class EA to projects that were not previously included.

The Minister shall consider all requests for amendment to the Environmental Assessment submitted by the proponents, or by the MEA on behalf of the proponents. If the Minister finds the amendment necessary, a Notice of the Proposed Amendment shall be issued to the public and any municipality, provincial ministry or agency that might be affected. At least 30 days shall be allowed for interested parties to comment. The Minister may refer the amendment to Cabinet for approval. If the amendment is approved, a Notice of Amendment shall be given to all persons who made submissions. A copy of the Notice shall also be placed in the Public Record.

7.1 TERMINATION OF APPROVAL

This approval shall terminate on the earlier of:

a) the date on which new approval is issued for the undertaking under the Environmental Assessment Act or

b) the fifth anniversary of this approval.

However, the Minister of the Environment may from time to time specify a later date by notice in the Ontario Gazette.

Within four (4) years following this approval, the proponents, or the MEA acting on behalf of the proponents, shall advise the Minister of the Environment regarding the appropriateness of extending this approval.

APPENDICES

APPENDIX 1:

STATUS OF MUNICIPAL SEWAGE AND WATER PROJECTS UNDER THE ENVIRONMENTAL ASSESSMENT ACT

In developing an environmental assessment approach for municipal sewage and water projects, it is necessary to identify the types of projects that fall into the various categories of application of the Environmental Assessment Act.

The following schedules are intended to assist people working with the Class EA to understand the status of various projects. These schedules were developed after extensive discussions among the members of the working group and represent what the group feels is a reasonable application of the Act.

NOTE: Where two or more EA approvals affect a municipal sewage and water project, to which this EA approval applies, the requirements of each EA approval shall apply, except to the extent the Minister has by notice in writing to the proponent, ruled that one or more provisions in conflict with another provision, shall not apply.

SCHEDULE A:

The following projects are approved. The proponent may proceed without following the procedures set out in any other part of this Class EA.

Sewage Projects:

1. normal and emergency operations activities (see definition of Operation in glossary). Such activities might include but are not limited to the following:

   - modify, repair, reconstruct existing facilities to provide operational, maintenance or other improvements such as: reducing odour; insulating buildings to reduce noise levels and conserve energy; landscaping.
   - ongoing maintenance activities
   - normal operation of sewage treatment plants
   - installation of new service connections, catchbasins and appurtenances from existing sewers
   - maintenance and/or minor improvements to grounds and structures
   - addition of minor buildings, sheds and storage areas
   - repairs, cleaning, renovations or replacement of sewage treatment facilities, pumping plant equipment, or outfalls
   - cleaning and/or relining existing collection system
   - repairs and renovations to existing collection system and/or appurtenances
   - increasing pumping station capacity by adding or replacing equipment and appurtenances where new equipment is located within an existing shell or housing structure
   - installation or replacement of standby power equipment where new equipment is located within an existing shell or housing structure

2. expand sewage treatment plant up to existing rated capacity where no new land is required

3. install chemical or other process equipment; provide additional treatment facilities in existing lagoons, such as aeration, chemical additions, post treatment; construct associated facilities in existing pumping stations

4. replace individual septic systems with alternative individual treatment plants

5. expand buffer zone between lagoon facility or land treatment area and adjacent uses

6. dispose of; utilize; or, manage on an interim basis (e.g., further treatment of sludge at drying beds, composting, temporary holding at transfer stations), sludge, at an existing sewage treatment plant where the sludge is generated; or at an existing landfill, incineration or organic soil conditioning site, where the sludge is to be utilized or disposed of

7. establish, extend, enlarge or expand a sewage collection system and all necessary works to connect the system to an existing sewage or natural drainage outlet, provided all such facilities are clearly shown on an approved development plan or are in an existing road allowance or an existing utility corridor (See Glossary for the definition of Approved Development Plans.)

8. establish a new sludge organic soil conditioning site

9. establish storm water detention or retention ponds or tanks and appurtenances provided all such facilities are clearly shown on approved development plans (See Glossary for definition of Approved Development Plans.)

10. expansions, improvements and modifications to existing patrol yards, storage facilities and maintenance facilities where no additional land acquisition is required.

NOTE:

Any activity associated with the implementation of an activity approved under Schedule 'A' is also approved under Schedule 'A'.

Feasibility Studies (see glossary) are exempt.

Drainage works regulated under the Drainage Act are exempt. Municipal drainage works undertaken under the Public Transportation and Highway Improvement Act are not subject to this Class EA but shall be considered under the Municipal Road Class EA.

Waste Disposal Sites for sludge management activities that are:

(i) organic soil conditioning sites certified under the Environmental Protection Act,

(ii) transfer stations for processed organic waste located at the sewage treatment works where it is generated or at the organic soil conditioning site where it is disposed of, or

(iii) sites certified under section 31 of the Environmental Protection Act for the disposal of waste other than hauled liquid industrial waste or hazardous waste as designated in regulations made under section 136(4) of the Environmental Protection Act,

are exempted by Ontario Regulation 205/87.

Water Projects:

1. normal and emergency operation activities (see definition of operation in glossary). Such activities might include but are not limited to the following:

   - modify, repair, reconstruct existing facilities to provide operational, maintenance or other improvements such as: reducing odour; insulating of buildings to reduce noise levels and conserve energy; landscaping.
   - ongoing maintenance activities
   - normal operation of water treatment plants
   - install new service connections, hydrants and appurtenances from existing mains
   - maintenance and/or minor improvements to grounds and structures
   - addition of minor buildings, sheds and storage areas
   - repairs, cleaning or replacement of a well or intake
   - repairs and renovations to treatment and pumping plant equipment, storage facilities, distribution mains and appurtenances

- installation of corrosion protection systems

- increasing pumping station capacity by adding or replacing equipment and appurtenances where new equipment is located within an existing shell or housing structure

- installation or replacement of standby power equipment where new equipment is located within an existing shell or housing structure

- increase existing storage capacity by addition, replacement, at substantially the same location

- cleaning and/or relining existing mains

2. expand water treatment plant up to existing rated capacity where no new land is required

3. install chemical or other process equipment, provide additional treatment facilities such as filtration in existing treatment plants, or in existing pumping stations

4. install new wells or relocate or deepen existing wells at an existing municipal well site property

5. establish, extend, enlarge or expand a water distribution system and all works necessary to connect the system to an existing system or water source, provided all such facilities are clearly shown on an approved development plan or are in an existing road allowance or an existing utility corridor (See Glossary for the definition of Approved Development Plans.)

6. expansions, improvements and modifications to existing patrol yards, storage facilities and maintenance facilities where no additional land acquisition is required.

7. New water systems for which an approval under the Ontario Water Resources Act is not required.

SCHEDULE B:
ACTIVITIES PROPOSED TO BE SUBJECT TO THE SCREENING PROCESS

The following projects are approved subject to screening, and a proponent may proceed with them without fulfilling the requirements of this Class EA other than the screening process outlined in this schedule. If the screening process results in other requirements of this Class EA being applicable, those requirements must also be fulfilled.

For these types of activities the proponent shall contact specific agencies and potentially effected members of the public when certain components of the environment are to be affected, (see Screening Criteria, following). For example, if in planning to modify an existing water system's intake it is determined that the project will directly affect a permanent watercourse, then the proponent shall contact the District Office of MNR.

Any agreements made or commitments given by the proponent during the course of the screening process must be implemented. If a party has a concern that could not be resolved through discussions between the party and the proponent, then the concern may be sent by either party to the Minister for resolution. If the concern is significant enough, then an Environmental Assessment may be required by the Minister, via the bump-up procedures. It is expected that this will not occur very often.

Bump-Up Under the Screening Process

The purpose of a "bump-up" provision being attached to the following screening process is to allow for individual environmental assessments for those exempted projects having significant negative environmental effects.

The procedure for a "bump-up" is, in general, as outlined in section 5.1 of this Class EA.

"Bump-up" requests for projects handled by means of the Screening Process may occur up to 30 calendar days after the project has been drawn to the attention of the appropriate agencies and potentially affected members of the public.

The project in this case would be elevated from an approved status to an Individual EA status. The reason for doing this, rather than placing it under the Class EA, is that it is unlikely that a conflict that could not be resolved between the proponent and the concerned person under the approved status, could be resolved under the Class EA. The Individual EA process, on the other hand, allows for third party arbitration and, where necessary, a public hearing.

Public Notification under the Screening Process

In the case of public notification for those projects that are approved with screening, the notification will be made early in project planning.

The proponent may select the method of notification that is appropriate for the specific project under consideration. The methods may range from individual notification to newspaper notices. It is important that those potentially affected by the project are notified early enough in the process that their comments can be considered in project planning.

Sewage Projects:

1. establish, extend, enlarge or expand a sewage collection system and all necessary works to connect the system to an existing sewage or natural drainage outlet where all such facilities are not shown on an approved development plan nor are in an existing road allowance or utility corridor (See Glossary for definition of Approved Development Plans.)

2. construct new storm water retention and detention ponds or tanks and appurtenances not necessary to service an approved development plan

3. increase size of existing communal septic tank or tile field at substantially the same location

4. extend, enlarge or add additional outfall in existing receiving waters

5. add flow equalization tankage at existing sewage treatment plant for influent and/or effluent control

6. establish interim sludge management facilities at: a sewage treatment plant where the sludge was not generated; or an existing landfill, incineration or organic soil conditioning site where the sludge is not to be disposed of nor utilized

7. retire (see definition of Retirement in the Glossary) a sewage facility, which was subject to the Act for its establishment

8. increase pumping station capacity by adding or replacing equipment and appurtenances where new equipment is located in a new structure

9. installation or replacement of standby power equipment where new equipment is located in a new structure

10. expand sewage treatment plant up to existing rated capacity where new land is required

11. expansions, improvements and modifications to existing patrol yards, storage facilities and maintenance facilities where additional land acquisition is required

12. New sewage systems classified by Ontario Regulation 374/81 as Class 4, 5 or 6 sewage systems, other than Class 'A' sewage systems or as Class 1, 2 or 3 sewage systems.

    Explanatory Note:

    This means that Classes 1 through 6 are now subject to Schedule B requirements unless they are Classes 4, 5 or 6 operating at more than 4500 litres per day (as defined in section 2, part 7 of Reg. 374/81 under the EPA).

Water Projects:

1. establish, extend, enlarge or expand a water distribution system and all works necessary to connect the system to an existing system or water source, where all such facilities are not shown on an approved development plan nor are in an existing road allowance or utility corridor (See Glossary for definition of Approved Development Plans.)

2. extend, enlarge or add additional intake pipe into existing surface water sources

3. establish facilities for disposal of treatment wastes (e.g., install sewer connection, construct holding pond, dewatering and hauling operations to disposal sites)

4. expand existing water treatment plant beyond existing rated capacity to service development provided for in approved development plans and official plans, where the expansion does not involve the acquisition of new property

5. expand existing water treatment plant up to existing rated capacity where additional land is required

6. retire (see definition of Retirement in the Glossary) a water facility, which was subject to the Act for its establishment

7. increase pumping station capacity by adding or replacing equipment and appurtenances where new equipment is located in a new structure

8. installation or replacement of standby power equipment where new equipment is located in a new structure

9. expansions, improvements and modifications to existing patrol yards, storage facilities and maintenance facilities where additional land acquisition is required.

SCREENING CRITERIA FOR UTILIZATION IN ASSOCIATION WITH SCHEDULE B TYPE PROJECTS

Situation	Example	Contact
Works directly affecting:		
Permanent and intermittent water courses and water bodies	- streams, creeks - marshes, bogs - lakes, ponds	- Conservation Authority - MNR District Office - MOE District Office (or other appropriate MOE offices)
Groundwater	- wells, aquifers - groundwater recharge areas	- Local Health Unit and/or MOE District Office
Rare, endangered or significant assemblage of wildlife fish and plant species	- list pursuant to the Endangered Species Act - game species - regionally significant wildlife, fish or flora	- MNR District Office - Conservation Authority
Environmentally sensitive area	- sensitive area as identified in MNR's or Conservation Authority's plans	- MNR District Office - Conservation Authority
Hazard Lands	- unstable soils - steep slopes - floodplain land	- MNR District Office - Conservation Authority
Woodlots	- Agreement Forests	- MNR District Office
Ornamental or Street Trees	- trees on municipal land	- Owner of property immediately adjacent to lands containing trees - municipal staff responsible for trees

Situation	Example	Contact
Recreational Areas	- Provincial Parks and park reserves - Conservation areas - Niagara Parks Commission - National Parks	- Owner of recreational property
Tourist Facilities	- motels, - restaurants, scenic lookouts	- Ministry of Citizenship and Culture (MCC)
Historical or Archaeological Resources	- historic buildings/bridges - scenic areas - historic archaeological sites, see MCC Guidelines - historic regions, e.g., Canada-Ontario-Rideau-Trent-Severn Corridor	- Ministry of Citizenship and Culture - Local Heritage or Historical Group including local Architectural Conservation Advisory Committee
Social Service Facilities	- homes for the aged - psychiatric homes - group homes - hospitals, etc.	- Ministry of Community and Social Services District Office
Transportation Service Facilities	- highways - navigable waters/harbours - airports - St. Lawrence Seaway	- Ministry of Transportation and Communications, District Office - Federal Department of Transport
Utilities	- electrical, telephone, oil, gas pipelines	- Ontario Hydro - Local Utility Companies
Sensitive or Special Planning Areas	- regionally significant growth centres, major industrial parks, subdivisions, - development in Northern Ontario	- Ministry of Muncipal Affairs - Min. of Housing - Ministry of Industry, Trade and Technology - Ministry of Treasury and Economics - Ministry of Northern Development and Mines

Situation	Example	Contact
Class 1-4 Agricultural land and Special Agricultural Areas		- Ontario Ministry of Agriculture and Food - Local Agricultural Representatives
Niagara Escarpment Planning Area		- Niagara Escarpment Commission
Parkway Belt Planning area		- Plans Administration Branch, Central and Southwest, Ministry of Municipal Affairs - Min. of Housing
IN ALL CASES	- every situation	- property owners adjacent to project site - local area and regional municipalities - potentially affected members of the public and adjacent municipalities - MOE District Office

SCHEDULE C:
THE FOLLOWING PROJECTS ARE SUBJECT TO THE CLASS ENVIRONMENTAL ASSESSMENT PROCESS

Note: Descriptions of these activities are provided in Section 3.0.

Sewage Projects:

1. construct new sewage system
2. construct new sewage treatment plant or expand existing sewage treatment plant beyond existing rated capacity
3. add additional lagoon cells to an existing sewage system
4. establish an outfall in a new receiving water body
5. provide for land application of effluent through spray irrigation system or overland flow
6. dispose of; utilize; or, manage on an interim basis, sludge, at a new sludge landfill site or new sludge incineration site
7. manage sludge at a transfer station or storage lagoon not located at a sewage treatment plant, incineration site, landfill site, nor organic soil conditioning site
8. new service facilities (e.g., patrol yards, storage and maintenance facilities, parking lots for service vehicles)

Water Projects:

1. construct new water system
2. construct new water treatment plant or expand existing water treatment plant beyond existing rated capacity to service development which is not provided for in approved development plans or official plans, or which involves the acquisition of new property
3. utilize a new surface water source
4. establish a new municipal well at a site other than an existing municipal well site
5. artificially recharge an existing aquifer with surface water

6. establish new water storage facilities at sites other than those wherein there already exists a water storage facility or at sites which are not within an existing road allowance or existing utility corridor

7. new service facilities (e.g., patrol yards, storage and maintenance facilities, parking lots for service vehicles)

APPENDIX 2

TYPICAL MITIGATING MEASURES FOR POTENTIAL ADVERSE ENVIRONMENTAL EFFECTS

Section 4.3 refers to the mitigation of potential adverse environmental effects. This appendix provides examples of possible site specific effects, and the measures which can be taken to mitigate those effects.

This list is illustrative only and the proponent shall be required to address specific effects during the planning and design process, and document these effects and the mitigating measures (if any) in the ESR.

TYPICAL MITIGATING MEASURES FOR POTENTIAL ADVERSE ENVIRONMENTAL EFFECTS

Effect	Mitigating Measures	Application (Where/When)
Surface Drainage System		
Sedimentation and turbidity of adjacent water bodies	- erosion control measures	During construction on slopes and drainage channels
	- sediment traps	Collect sediment before entering drainage channel
	- staging work	During biologically critical periods
"Ponding" effects on adjacent properties due to natural drainage disruption	- appropriate use of culverts, porous backfill and tile drains	In new construction projects and expansion
Streambank erosion from diversion and/or channelization of watercourse	- erosion control measures	River crossings, outfall construction
Contamination of surface waters through runoff, spills, leaks and disinfection activities Implement appropriate disinfection solution discharge techniques in concert with fisheries requirements	- provision for spill control - fast accurate reporting of spill - spill containment - stockpile materials or devices for spill control - avoid adverse soil conditions - monitor facility for leaks	As a general practice and particularly in vicinity of water bodies, wetlands
Blasting exposes rocks containing soluble minerals that could potentially contaminate surface water supply, i.e., sulfate, lead, arsenic	- subsurface investigation, i.e., geochemical analysis of bedrock - avoid blasting in areas containing toxic materials	Areas of shallow soil over relevant bedrock type (normally occurring in Canadian Shield)
Changes in volume of surface runoff	- use design measures to minimize increase in surface runoff	New impervious surfaces

Effect	Mitigating Measures	Application (Where/When)
Changes in flood storage capacity by placing fill and structures in floodplain	- avoid placing fill and structures in floodplain or compensate elsewhere	Construction within river valleys Disposal of excess fill
Groundwater		
Through blasting, expose rocks containing soluble minerals that could potentially contaminate groundwater, e.g., sulfate, lead, arsenic	- subsurface investigation, i.e., geochemical analysis of bedrock - avoid blasting in areas containing toxic minerals	Areas of shallow soil over bedrock
Truncation of shallow aquifers and springs	- hydrogeologic investigation to identify such areas in advance	Excavations
Reduced groundwater quantity through construction dewatering	- avoid groundwater users and water-bearing formations (soils) - proper dewatering techniques	Depletion of shallow aquifers and spring by groundwater utilization
Spills or leaks resulting in contamination of groundwater supply	- construction refueling precautions - landfilling precautions - operation and storage precautions	Near watercourses and on site generally
Drainage of wetland areas resulting in a reduced groundwater contribution to surface water bodies	- avoid wetland areas - utilize appropriate backfill material, i.e., highly permeable backfill is unsuitable	Trenching, excavating, placing fill, dewatering
Reduced surface water recharge to groundwater particularly in soils with high infiltration characteristics	- restrict extent of impervious surfaces in zones of high infiltration	Subsurface barriers, e.g., foundations, areas of impervious surfaces, e.g., parking lots, roads, compaction of soil
Impedence of groundwater movement	- maintenance of the existing groundwater flow regime through engineering design	Excavations, drainage, construction, dewatering, e.g., in roadbeds, foundations and trenches

Effect	Mitigating Measures	Application (Where/When)
Groundwater (cont'd)		
Contamination of adjacent wells through runoff from construction	- erosion control - locate projects appropriately	Construction adjacent to well sites and exposed aquifers
Fish, Aquatic Wildlife and Vegetation		
Introduction of warmer water from ponds into colder surface water-course	- appropriate selection of ponding site - infiltrate into groundwater system	Dewatering of trench, and excavations, Sediment traps
Modification or removal of aquatic habitat; displacement of plants and animals	- stage work to non-critical times - restore stream substrate - choose suitable site for stream diversion	During construction, e.g., river crossings, and dewatering of excavations
Reduced water quality of nearby surface water having value as wildlife habitat	- provisions for spill control - fast and accurate reporting of spill - spill containment - stockpile materials or devices for spill control	Storm sewers, ditches and diversions
Operations by-passing	- avoid adverse soil conditions - minimize tree removal	
Timing effects of construction on spawning and breeding periods	- staging of work to avoid spawning and breeding periods	For stream crossings and diversions
Lowering of water table resulting in reduced contribution to streams and stress on riparian vegetation	- design to maintain existing groundwater flows - restrict extent of impervious surfaces in zones of high infiltration	Dewatering of trenches, excavations and aquifers Areas of newly created impervious surfaces
Increased nutrient status of existing habitats	- provisions for spill control - landfilling precautions	Near watercourses and on site generally

Effect	Mitigating Measures	Application (Where/When)
Fish, Aquatic Wildlife and Vegetation (cont'd)		
Drainage of wetland areas causing mortality or stress to animals and possible changes in species composition	- maintain existing groundwater regime - avoid wetland areas - utilize appropriate backfill material, i.e., highly permeable backfill is unsuitable	Trenching or excavating
Siltation to surface watercourses resulting in "smothered" plants and animals due to the deposition of silt and increased turbidity of surface watercourses	- utilize suitable backfill material - trench drainage should be discharged to settling areas before being permitted to enter surface waterbodies - erosion control measures - staging of work	Trench road bed and ditch constructions Storm sewer outfalls Erodible soils, stockpiles
Pressure on biological communities	- consider the carrying capacity of the local natural environment	Sewer and water facilities allow enhanced municipal/ population growth. This increases stress on recreational and natural resources
Tree removal will affect the amount of sunlight reaching waters and affect plant productivity and increase watercourse temperatures	- avoid tree removal near surface water-bodies	Stream crossings
Terrestrial Vegetation and Wildlife		
Introduction of exotic plant species through erosion control measures and restoration	- use annuals which later die out - use indigenous (native) species only	On slopes and other areas to control erosion In any disturbed area requiring restoration work

Effect	Mitigating Measures	Application (Where/When)
Terrestrial Vegetation and Wildlife (cont'd)		
Changes in vegetative composition as a result of loss of topsoil and subsoil or mixing	- restore site by replacing soil in preconstruction horizons	Trenching or excavating
Removal or disturbance of significant trees and/or ground flora	- avoid these areas - employ tree protection measures	During construction phase of any project
New or increased exposure of forest edge with resultant effects of windthrow, leading to increased loss of habitat for wildlife	- avoid woodlots and similar areas - pre-stress woodlots	During construction phase of any project
Mortality/stress due to changes in soil moisture conditions, resulting in loss of wildlife habitat	- avoid poorly drained areas - use of appropriate roadbed and backfill materials - revegetate using indigenous species able to survive new conditions	During construction of roadbed and storm sewers
Heritage Resources		
Deterioration of sites or structures having archaeological, historical or architectural values, as a result of environmental changes.	- employ necessary steps to decrease harmful environmental impacts such as vibration, alterations of water table, etc.	Where appropriate with respect to archaeological, historical or architectural resources
Unwanted increase in public access and potential vandalism	- fence off area of concern - prevent public access	Where appropriate with respect to archaeological heritage resources
Threatened viability of, or opportunity for, retention of sites with heritage value	- avoid these areas	Where appropriate with respect to archaeological heritage resources

Effect	Mitigating Measures	Application (Where/When)
Heritage Resources (cont'd)		
Unavoidable destruction of heritage structures or archaeological sites	- record or salvage information on features to be lost	Where appropriate with respect to significance of the heritage resource
Agricultural		
Soil contamination by chemicals	- establish and enforce chemical handling standards - provide for emergency clean-up and soil replacement	As general practice
Removal of productive farmland	- design facilities so as to minimize land requirements and construction disturbance; rehabilitate disturbed areas	In rural areas
Disruption of field access	- provide alternative access points at critical times	In rural areas
Disturbance of livestock by noise and dust during construction	- employ noise and dust control measures	In rural areas
Disruption of tile and surface drainage systems	- stage construction work - restore tile and surface drainage system	In rural areas
Loss of sludge use as fertilizer	- improve sludge quality	In rural areas
Decrease in groundwater	- design to minimize dewatering effects - provide recharge	In rural areas
Residential, Institutional, Commercial and Industrial		
Disruption of pedestrian movements between adjacent uses	- maintain continuity of pedestrian walkway system as much as possible	As general practice

Effect	Mitigating Measures	Application (Where/When)
	- provide walkway strips to adjacent residential areas	Where suitable
	- provide crosswalks and sidewalks at access points	Where suitable
Facilities inconsistent with or which disrupt character of area	- preserve existing amenities as much as possible	As general practice
	- design and site structures to blend with adjacent building forms and materials	As general practice
	- grade site area to pleasing lines, utilize berms	Where suitable
Temporary disruption during construction and/or inconvenience to users of adjacent properties and building	- notify public agencies and adjacent owners of construction scheduling	Where substantial inconvenience or disruption to adjacent uses would be experienced and where measures would substantially reduce effects
	- prepare 'emergency program' to ensure quick resolution of servicing problems	As general practice
	- consult with public agency and/or adjacent landowners regarding temporary access re-routing	
	- schedule construction so as to minimize period of disruption in proximity of adjacent uses and structures	
Removal of residences and other buildings	- co-ordinate removal program to minimize inconvenience	As general practice

Effect	Mitigating Measures	Application (Where/When)
Outdoor Recreation		
Temporary disruption of open space activities during construction	- employ noise and dust control measures - staging of construction to cause least disruption	In areas within or adjacent to public open space
Effects of physical changes in layout of recreational uses due to property loss	- compensate elsewhere	In areas within or adjacent to public open space
Soils Geology		

Erosion by wind and water	- revegetation
	- stage work
	- avoid highly erodible soils
	- stabilize slopes:
	  - compaction
	  - chemical stabilizers
	  - gravel blankets
	  - seeding
	  - sodding
		Erodible soils in excavations, cut and fill areas
		
		Stockpiles, cut slopes

Slumping of encroached slopes	- avoid potentially unstable slopes - mechanical stabilization methods - revegetation (only effective once the root infrastructure has developed) - restrict dewatering near slopes	Steep slopes Cut slopes Removal of the toe of a slope during construction Dewatering
Rockfall hazard	- buffer zone - initiate rockfall at potential failures	Blasting Steep weathered slopes
Loss of aggregate and mineral resources	- avoid sites of aggregate and mineral reserves - extract aggregate and minerals prior to construction	Zones of economic aggregate and mineral occurrence

Effect	Mitigating Measures	Application (Where/When)
Contamination of soils by petrochemicals, etc.	- remedial measures to avoid spills and leaks - contingency plan for clean-up	During construction
Contamination of topsoil with subsoil	- stripping and stock-piling of topsoil and stabilization	Generally in areas of undisturbed soils
Topography/Landforms		
"Scarring" of unique features	- avoid unique features	Designation of unique feature, i.e., landmark
Climatic Features		
Removal of vegetation causing reduction of windscreen effect on adjacent buildings or activity	- retain as much vegetation as possible - avoid vegetated areas in close proximity to buildings or activity areas - restore vegetation as soon as possible	Construction in close proximity to buildings or activity areas
Public Health		
Exhaust emissions from construction equipment and vehicles	- minimize operation on site, control location on site	Where adjacent uses or natural vegetation could be adversely affected
Effects on groundwater elevation on existing subsurface sewage disposal systems (e.g., septic systems)	- monitor groundwater levels and, if necessary, take appropriate action	Where appropriate
Groundwater contamination	- construction refueling precautions - landfill design and operation precautions - precautions in operation and storage facilities - containment of leachate maintenance facilities	On site generally
Effects of emergency by-passing of sewage	- contact potentially affected government agencies and public downstream within 24-hours of by-pass event	In all cases

APPENDIX 3

ONTARIO'S ENDANGERED SPECIES LIST*

1. Blue racer, Coluber constrictor foxi Baird and Girard
2. Timber rattlesnake, Crotalus horridus horridus Linnaeus
3. Peregrine falcon, Falco peregrinus anatum Bonaparte
4. Bald eagle, Haliaeetus leucocephalus alascanus Townsend
5. West Virgina white butterfly, Pieris virginiensis Edwards
6. Lake Erie water snake, Natrix sipedon insularum Conant and Clay
7. Piping plover, Charadrius melodus Ord
8. Eskimo curlew, Numenius borealis Forster
9. Golden eagle, Aquila chrysaetos Linnaeus
10. White pelican, Pelecanus erythrorhynchos Gmelin
11. Mountain lion or eastern cougar, Felis concolor couguar Kerr
12. Small white lady's-slipper orchid, Cypripedium candidum Muhl
13. Kirtland's warbler, Dendroica kirtlandii Baird
14. Small whorled pogonia, Isotria medeoloides (Pursh.) Raf.

* According to the Endangered Species Act.